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SIXTY-SECOND ANNUAL REPORT

OF THE

Ohio State Board of Agriculture

WITH AN ABSTRACT OF
THE PROCEEDINGS OF

The County Agricultural Societies

For the Year 1907

TO THE

General Assembly of the State of Ohio

20 ALLIED PRINTING TRADES UNION LABEL COUNCIL SPRINGFIELD

Springfield, Ohio:
The Springfield Publishing Company,
State Printers.
1908.

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ANNUAL REPORT

OF THE

Ohio State Board of Agriculture

For the Year 1907

Department of Agriculture,

Columbus, March 1, 1908.

To the General Assembly of Ohio:

Gentlemen:—In accordance with the directions of Sections 3693 and 3694, of the Revised Statutes of Ohio, the Ohio State Board of Agriculture herewith submits its sixty-second annual report, which contains all the transactions of the board for the year 1907.

There will also be found in this report copy of all bulletins published by the various divisions of this Department during 1907, as directed and provided by your honorable body, with the exception of the Report on Commercial Fertilizers, which we were permanently enjoined from publishing.

The Ohio State Board of Agriculture is endeavoring to perform the duties prescribed for it in an honest, fearless, upright and conscientious manner.

The State Fair of 1907 was the most successful ever held in Ohio, both from an educational and financial standpoint, the net earnings being twenty-seven thousand dollars, which the Board expects to use in improvements on grounds, including a Men's Comfort Station, and covered walks connecting live stock buildings, etc. These improvements will not only increase the value of the property, but will be greatly appreciated by the patrons of the Fair.

The members of the State Board of Agriculture feel that they should use every effort to improve the agricultural interests of Ohio, and earnestly request your hearty support and co-operation in this great work.

Respectfully,

THE OHIO STATE BOARD OF AGRICULTURE,

By T. L. Calvert, *Secretary.*

J. W. Fleming, *Assistant Secretary.*

Ohio State Board of Agriculture

1907

OFFICERS

L. P. BAILEY	President.
C. H. GANSON	Vice-President.
SAMUEL TAYLOR	Treasurer.
T. L. CALVERT, Columbus	Secretary.
J. W. FLEMING, Columbus	Assistant Secretary

MEMBERS

	Term Expires
SAMUEL TAYLOR, Grove City, Franklin County	January, 1908
P. G. EWART, East Akron, Summit County	January, 1908
L. P. BAILEY, Tacoma, Belmont County	January, 1909
H. M. BROWN, Hillsboro, Highland County	January, 1909
T. E. CROMLEY, Ashville, Pickaway County	January, 1910
L. W. KILGORE, London, Madison County	January, 1910
WILLIAM MILLER, Gypsum, Ottawa County	January, 1911
C. W. McFARLAND, Galion, Morrow County	January 1911
C. H. GANSON, Urbana, Champaign County	January, 1912
A. P. SANDLES, Ottawa, Putnam County	January, 1912

EXECUTIVE COMMITTEE

L. P. BAILEY, Chairman.

A. P. SANDLES,
SAMUEL TAYLOR,
C. H. GANSON,
T. E. CROMLEY.

FARMERS' INSTITUTE COMMITTEE

H. M. BROWN, Chairman.

WILLIAM MILLER,
L. W. KILGORE.

AUDITING COMMITTEE

A. P. SANDLES, Chairman.

C. W. McFARLAND,
P. G. EWART.

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Ohio State Board of Agriculture

1908

OFFICERS

H. M. BROWN, President.
T. E. CROMLEY, Vice-president.
C. W. McFARLAND, Treasurer.
T. L. CALVERT, Secretary, Columbus.
J. W. FLEMING, Assistant Secretary, Columbus.

MEMBERS

	Term Expires.
L. P. BAILEY, Tacoma, Belmont County	January 1909.
H. M. BROWN, Hillsboro, Highland County	January 1909.
T. E. CROMLEY, Ashville, Pickaway County	January 1910.
L. W. KILGORE, London, Madison County	January 1910.
WILLIAM MILLER, Gypsum, Ottawa County	January 1911.
C. W. McFARLAND, Galion, Morrow County	January 1911.
C. H. GANSON, Urbana, Champaign County	January 1912.
A. P. SANDLES, Ottawa, Putnam County	January 1912.
P. G. EWART, East Akron, Summit County	January 1913.
G. E. JOBE, Cedarville, Greene County	January 1913.

EXECUTIVE COMMITTEE

H. M. BROWN, Chairman, L. P. BAILEY,
C. H. GANSON, T. E. CROMLEY,
C. W. McFARLAND.

FARMERS' INSTITUTE COMMITTEE

WILLIAM MILLER, Chairman, A. P. SANDLES,
L. W. KILGORE.

AUDITING COMMITTEE

P. G. EWART, Chairman, L. P. BAILEY,
G. E. JOBE.

LIST OF MEMBERS OF THE OHIO STATE BOARD OF AGRICULTURE FROM THE ORGANIZATION OF THE BOARD TO DATE.

(NOTE.—The act creating the State Board of Agriculture, passed in 1846, provided for fifty-three members and named them. The act was amended in 1847, reducing the number of members to ten. Five members were elected each year for a term of two years until 1898, when the act was so amended as to provide for the election of two members each year for a term of five years.)

Names.	Years of Service, Inclusive.	Residence.
John B. Bayless	1846	Jefferson County.
Henry C. Brish	1846	Seneca County.
Frederick Bonner	1846	Greene County.
Joseph Burns	1846	Coshocton County.
John Chaney	1846	Fairfield County.
G. W. Cowden	1846	Trumbull County.
Absalom Dun	1846	Butler County.
John Eckels	1846	Hancock County.
Elias Florence	1846	Pickaway County.
John Fuller	1846	Erie County.
Geo. W. Gibbons	1846	Muskingum County.
William Gill	1846	Pickaway County.
H. N. Gillett	1846	Lawrence County.
L. C. Goble	1846	Putnam County.
David Gregory	1846	Delaware County.
Anson Howard	1846	Champaign County.
John Johnson	1846	Miami County.
Aaron Johnson	1846	Perry County.
Greenbury Keen	1846	Portage County.
Billius Kirtland	1846	Mahoning County.
Newton Larsh	1846	Preble County.
Liba Lindley	1846	Athens County.
Jas. Loudon	1846	Brown County.
John McElderry	1846	Tuscarawas County.
Wm. McFadden	1846	Harrison County.
Beatty McFarland	1846	Jefferson County.
John Martin	1846	Columbiana County.
Isaac Moore	1846	Lake County.
Gilman C. Mudgett	1846	Paulding County.
Samuel Myers	1846	Crawford County.
Isaac Neiswanger	1846	Belmont County.
Simon Perkins	1846	Summit County.
Henry Protzman	1846	Montgomery County.
W. R. Putman, Jr.	1846	Washington County.
Felix Renick	1846	Ross County.
Jas. L. Reynolds	1846	Stark County.
Benj. Ruggles	1846	Belmont County.
Sam'l Spangler	1846	Fairfield County.
David Stevens	1846	Richland County.
Abraham Studdebaker	1846	Darke County.
Dowty Utter	1846	Clermont County.
John I. Vanmeter	1846	Pike County.
Richard Warner	1846	Medina County.
Jesse Wilson	1846	Shelby County
J. M. Millikin	1846	Hamilton.
J. T. Pugsley	1846	Convenience.
Allen Trimble	1846–51	Hillsboro.
M. L. Sullivant	1846–53	Columbus.
Sam'l Medary	1846–53	Columbus.
Darius Lapham	1846–50	Cincinnati.

MEMBERS OF THE STATE BOARD OF AGRICULTURE.—Continued.

Names.	Years of Service, Inclusive.	Residence.
Arthur Watts	1846–52	Chillicothe.
J. P. Kirtland	1846–48	Cleveland.
A. E. Strickle	1846–49	Wilmington.
M. B. Bateham	1847–51	Columbus.
John Codding	1847–49	Granger.
C. Springer	1848–52	Meadow Farm.
J. M. Edwards	1848–52	Canfield.
J. G. Gest	1848–54	Spring Valley.
F. R. Elliott	1849–51	Cleveland.
J. T. Pugsley	1850–51	Convenience.
S. Halloway	1850–51	St. Clairsville.
William Case	1852–53	Cleveland.
Philo Adams	1852–53	Huron.
R. W. Musgrave	1852–57	Sulphur Springs.
R. W. Steele	1853–56	Dayton.
William H. Ladd	1853–56	Richmond.
D. McIntosh	1853–54	Shalersville.
J. T. Worthington	1853–56	Chillicothe.
Joseph Sullivant	1854–55	Columbus.
John K. Greene	1854–57	Cincinnati.
James L. Cox	1854–55	Zanesville.
B. Stedman	1854–57	Cleveland.
Alexander Waddle	1855–60	South Charleston.
Abel Krum	1855–58	Cherry Valley.
Lucien Buttles	1856–59	Columbus.
G. W. Baker	1856–57	Marietta.
John M. Milliken	1857–62	Hamilton.
Luther Smith	1857–58	West Liberty.
Thomas S. Webb	1857–58	Massillon.
Norton S. Townshend	1858–63	Avon.
L. Q. Rawson	1858–59	Fremont.
James M. Trimble	1858–61	Hillsboro.
John Reber	1858–61	Lancaster.
D. E. Gardner	1859–64	Toledo.
William Dewitt	1859–64	Cleveland.
C. W. Potwin	1859–62	Zanesville.
T. C. Jones	1860–67	Delaware.
Henry B. Perkins	1860–63	Warren.
David Taylor	1861–66	Columbus.
Jacob Egbert	1862–63	Lebanon.
Nelson J. Turney	1862–69	Circleville.
D. McMillan	1863–70	Xenia.
W. R. Putnam	1863–64	Marietta.
William F. Greer	1864–67	Painesville.
James Fullington	1864–69	Irwin Station.
William B. McClung	1864–71	Troy.
James W. Ross	1865–70	Perrysburg.
R. R. Donnelly	1865–68	Wooster.
James Buckingham	1865–72	Zanesville.
J. Park Alexander	1867–70	Akron.
Norton S. Townshend	1868–69	Avon.
William Lang	1868–71	Tiffin.
D. C. Richmond	1869–74	Sandusky.
R. P. Cannon	1870–75	Aurora.
James B. Jamison	1870–77	Cadiz.
L. G. Delano	1870–75	Chillicothe.
L. B. Sprague	1871–76	Springfield.
Simpson Harmount	1871–76	New Philadelphia.
John A. Warder	1871–76	Cleves.

MEMBERS OF THE STATE BOARD OF AGRICULTURE.—Continued.

Names.	Years of Service, Inclusive.	Residence.
W. S. Hickox	1872–73	Mansfield.
B. W. Carlisle	1872–79	Hooker's Station.
Justus C. Stephens	1873–74	Kenton.
John M. Pugh	1874–79	Columbus.
L. B. Wing	1875–80	Newark.
Russell C. Thompson	1875–76	Sylvania.
Leo Weltz	1876–83	Wilmington.
D. L. Pope	1876–81	Welshfield.
Charles Smith	1877–80	Marion.
E. T. Stickney	1877–78	Republic.
A. E. Stone	1877–78	Gallipolis.
Peter Murphy	1877–80	Hughes' Station.
W. N. Cowden	1878–83	Quaker City.
R. Baker	1879–82	Elyria.
Arvine C. Wales	1879–82	Massillon.
R. H. Hayman	1880–81	Portsmouth.
O. P. Chaney	1880–82	Canal Winchester.
C. D. Bailey	1881–88	Gallipolis.
J. C. Levering	1881–86	Levering.
William S. Foster	1881–88	Urbana.
L. B. Harris	1882–87	Upper Sandusky.
J. H. Brigham	1882–89	Delta.
L. N. Bonham	1883–86	Oxford.
H. Talcott	1883–87	Jefferson.
N. A. Sims	1883–85	Columbus.
T. P. Shields	1884–87	Watkins.
John Pow	1884–89	Salem.
S. H. Hurst	1884–89	Chillicothe.
J. J. Sullivan	1887–88	Millersburg.
Joseph H. Terrell	1887–88	New Vienna.
J. G. Russell	1887–90	Mt. Gilead.
H G. Tryon	1888–91	Willoughby.
J. M. Black	1888–91	Hanover (Fairmount W. Va.)
A. H. Kling	1889–96	Marion.
H. S. Grimes	1889–90	Portsmouth.
A. J. Clark	1889–98	Cambridge.
W. W. Miller	1889–94	Castalia.
J. W. Pollock	1890–93	Cedarville.
N. Ohmer	1890–95	Dayton.
L. G. Ely	1890–91	West Unity.
E. L. Hinman	1890–93	Columbus.
J. C. Bower	1891–98	Athens (Groveport.)
George Lewis	1891–94	Van Wert.
Chester Bordwell	1892–93	Batavia.
F. A. Derthick	1892–95	Mantua.
J. T. Robinson	1894–97	Rockaway.
G. Liggett	1894–1901	Watkins.
J. N. Pringle	1894–95	Cardington.
E. C. Ellis	1895–98	Crestvue.
Chester Bordwell	1895–1901	Batavia.
L. G. Ely	1896–1900	Fayette (West Unity)
H. S. Grimes	1896–1900	Portsmouth.
Albert Hale	1896–99	Mogadore.
J. S. Stuckey	1897–1903	Van Wert.
S. H. Ellis	1898–99	Waynesville.
D. J. Green	1899–1902	Renrock.
B. P. Baldwin	1899–1903	Tiger.
Samuel Taylor	1899–1907	Grove City.

Members of the State Board of Agriculture.—Concluded.

Names.	Years of Service, Inclusive.	Residence.
T. E. Cromley	1900	Ashville.
*T. L. Calvert	1900–1906	Selma.
Wm. Miller	1901	Gypsum.
J. L. Carpenter	1901–1906	Carpenter.
C. H. Ganson	1902	Urbana.
A P. Sandles	1902	Ottawa.
R. O. Hinsdale	1903–1906	Wadsworth.
*E. L. Lybarger	1904–1906	Spring Mountain.
L. P. Bailey	1904	Tacoma.
Dr. H. M. Brown	1906	Hillsboro.
C. W. McFarland	1906	Galion.
P. G. Ewart	1907	East Akron.
G. E. Jobe	1908	Cedarville.

*Resigned.

LIST OF OFFICERS OF THE OHIO STATE BOARD OF AGRICULTURE FROM ITS ORGANIZATION TO DATE; ALSO TABLES SHOWING PLACE OF HOLDING AND RECEIPTS OF EACH FAIR.

Yr.	President.	Treasurer.	Secretary.	Place of Fair.	Receipts.
1846	Allen Trimble	M. L. Sullivant	Samuel Medary	Cincinnati	....
1847	Same	Same	M. B. Bateham	Columbus	....
1848	Same	Same	Same	....	....
1849	M. L. Sullivant	Samuel Medary	Same	....	....
1850	Same	Same	Same	....	$8,036 18
1851	Same	Same	W. W. Mather	....	8,204 09
1852	Arthur Watts	Same	Same	Cleveland	13,360 00
1853	Samuel Medary	M. L. Sullivant	Geo. Sprague	Dayton	13,996 37
1854	R. W. Musgrave	Joseph Sullivant	Same	Newark	8,824 58
1855	J. T. Worthington	Same	Same	Columbus	9,745 54
1856	William H. Ladd	Lucien Buttles	Same	Cleveland	16,684 20
1857	Alexander Waddle.	Same	J. H. Klippart	Cincinnati	17,530 75
1858	John M. Millikin	Same	Same	Sandusky	9,997 70
1859	N. S. Townshend	Same	Same	Zanesville	8,958 82
1860	Alexander Waddle.	Chas. W. Potwin	Same	Dayton	11,998 50
1861	Darwin E. Gardner	Same	Same	Dayton	8,036 18
1862	Thomas C. Jones	David Taylor	Same	Cleveland	11,260 64
1863	N. S. Townshend	Same	Same	Cleveland	11,142 00
1864	Nelson J. Turney	Same	Same	Columbus	12,620 54
1865	Same	Same	Same	Columbus	10.658 65
1866	Wm. B. McClung	Same	Same	Dayton	14.035 80
1867	Daniel McMillen.	Jas. Buckingham	Same	Dayton	18.692 98
1868	James Fullington	Same	Same	Toledo	15,606 25
1869	Same	Same	Same	Toledo	19,606 50
1870	James W. Ross	J. Park Alexander	Same	Springfield	18,252 85
1871	William Lang	Jas. Buckingham	Same	Springfield	16,460 25
1872	James Buckingham.	Simpson Harmount	Same	Mansfield	19,149 45
1873	Lincoln G. Delano	Same	Same	Mansfield	22,517 50
1874	Same	Same	Same	Columbus	27,674 79
1875	R. P. Cannon	Same	Same	Columbus	20,539 30
1876	S. Harmount	J. M. Pugh	Same	Columbus	11,909 61
1877	J. B. Jamison	Same	Same	Columbus	21,151 21
1878	J. M. Pugh	L. B. Wing	Same	Columbus	11,979 50
1879	B. W. Carlisle	Same	J. W. Fleming	Columbus	30,703 35
1880	L. B. Wing	D. L. Pope	W. I. Chamberl'n	Columbus	23,682 20
1881	D. L. Pope	Leo. Weltz	Same	Columbus	29,706 16
1882	R. Baker	W. N. Cowden	Same	Columbus	34,082 52
1883	W. N. Cowden	L. B. Harris	Same	Columbus	38,513 78
1884	W. S. Foster	Same	Same	Columbus	33,306 48
1885	C. D. Bailey	J. C. Levering	Same	Columbus	29.796 51
1886	L. N. Bonham	L. B. Harris	Same	Columbus	30,533 17
1887	J. H. Brigham	Same	L. N. Bonham	Columbus	30,902 10
1888	John Pow	J. G. Russell	Same	Centennial year, no fair	....
1889	Same	Same	Same	Columbus	19,637 41
1890	J. G. Russell	A. H. Kling	Same	Columbus	27,574 55
1891	J. M. Black	Same	Same	Columbus	33,878 64
1892	A. H. Kling	W. W. Miller	Same	Columbus	30,357 19
1893	J. W. Pollock	Same	Same	Columbus	19,350 93
1894	W. W. Miller	F. A. Derthick	Same	Columbus	27,260 25
1895	A. J. Clark	Same	W. W. Miller	Columbus	33,966 13
1896	J. C. Bower	A. J. Clark	Same	Columbus	22,531 20
1897	J. T. Robinson	J. C. Bower	Same	Columbus	30,369 48
1898	C. Bordwell	Same	Same	Columbus	31,023 36
1899	L. G. Ely	H. S. Grimes	Same	Columbus	33,749 17
1900	H. S. Grimes	L. G. Ely	Same	Columbus	31.521 35
1901	J. S. Stuckey	G. Liggett	Same	Columbus	51,576 50
1902	Samuel Taylor	T. L. Calvert	Same	Columbus	40,519 72
1903	T. E. Cromley	Same	Same	Columbus	49.292 75
1904	J. L. Carpenter	Same	Same	Columbus	37,632 97
1905	William Miller	Same	Same	Columbus	59,084 48
1906	A. P. Sandles	Samuel Taylor	T. L. Calvert	Columbus	61,443 45
1907	L.P. Bailey	Same	Same	Columbus	80,761 40

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TRANSACTIONS

OF THE

Ohio State Board of Agriculture

For the Year 1907

DEPARTMENT OF AGRICULTURE,
COLUMBUS, OHIO, January 17, 1907.

At 9:30 o'clock p. m., the following named gentlemen, members and members-elect of the Ohio State Board of Agriculture, met for organization:

	Term Expires.
Samuel Taylor, Grove City, Franklin County	January, 1908
P. G. Ewart, East Akron, Summit County	January, 1908
L. P. Bailey, Tacoma, Belmont County	January, 1909
H. M. Brown, Hillsboro, Highland County	January, 1909
T. E. Cromley, Ashville, Pickaway County	January, 1910
L. W. Kilgore, London, Madison County	January, 1910
William Miller, Gypsum, Ottawa County	January, 1911
C. W. McFarland, Galion, Morrow County	January, 1911
A. P. Sandles, Ottawa, Putnam County	January, 1912
C. H. Ganson, Urbana, Champaign County	January, 1912

The oath of office was administered to A. P. Sandles and C. H. Ganson, elected to membership for five years; L. W. Kilgore, elected to membership for a period of three years to fill the vacancy occasioned by the resignation of T. L. Calvert; and P. G. Ewart, elected to membership for one year to fill the vacancy occasioned by the death of R. O. Hinsdale.

Mr. Ganson nominated Mr. L. P. Bailey for president and moved that the secretary be instructed to cast the ballot. The motion was agreed to, and the secretary cast the ballot as per instructions; whereupon Mr. Bailey was declared the duly elected president of the Board for the ensuing term.

Mr. Cromley presented the name of C. H. Ganson for vice-president, and moved that the secretary be instructed to cast the vote of the Board. The motion prevailing, the secretary cast the unanimous vote of the Board for Mr. Ganson, and he was declared the duly elected vice-president for the ensuing term.

Mr. Brown nominated Mr. Taylor as treasurer of the Board for the ensuing term, and moved that the secretary be instructed to cast the ballot. The motion prevailing, the secretary cast the unanimous vote of the Board for Mr. Taylor, and he was declared the duly elected treasurer.

Mr. Miller moved that the terms of the secretary and assistant secretary of the Board be for two years from February 1st next, and all previous rules or resolutions of the Board conflicting with this be hereby rescinded. The motion was unanimously adopted.

Mr. Taylor moved that the salary of the secretary be twenty-eight hundred dollars per annum, and that of the assistant secretary be eighteen hundred dollars per annum. The motion was unanimously adopted.

On motion of Mr. Cromley, Mr. Calvert was unanimously elected secretary for the ensuing term of two years, and Mr. Fleming was unanimously elected assistant secretary for the ensuing term of two years. After the election of the officers, the newly elected members and officers of the Board made appropriate remarks, expressing their appreciation of the honors conferred.

On motion of Mr. Cromley it was agreed that the secretary and assistant secretary be required to give surety bonds of twenty thousand dollars and ten thousand dollars, respectively, per annum, the expense of said bonds to be paid by the Board. It was further agreed that these bonds be deposited in the keeping of the treasurer.

Mr. Brown moved that the rules of the Board requiring the treasurer to give bond in the sum of twenty-five thousand dollars be amended, and that he now be required to give surety bond in the sum of thirty thousand dollars, the expense of said bond to be borne by the Board. The motion was unanimously adopted.

Mr. Ganson moved that a vote of thanks be tendered our retiring president, Mr. A. P. Sandles, for his courteous treatment of the members of the Board during his term of office. The motion was carried unanimously.

Mr. Brown moved that the sum of nine thousand dollars be set apart for the use of the Nursery and Orchard Inspection Division of the Department, and that the Board, through its secretary, exercise diligent judgment in an effort to curtail the expense of that division, if it can be done without detriment to the service. The motion prevailed.

On motion of Mr. Cromley it was agreed that Mr. Sandles serve as a member of the building committee and of the Ohio Jamestown Exposition committee of the Board, in place of the president.

At 11:30 o'clock p. m., on motion, the Board adjourned to meet on Monday, February 18th, at 7:00 o'clock p. m., for the purpose of revising the premium list of the Ohio State Fair, and the transaction of such other business as may come before it.

Department of Agriculture,
Columbus, Ohio, February 18, 1907.

The Ohio State Board of Agriculture met at 7:30 o'clock p. m., with all members present and President Bailey in the chair.

The minutes of the preceding meeting were read and approved.

On motion of Mr. Ganson it was agreed that a Joyous Buckeye Home-Coming be held during the continuance of the coming fair, and that a committee, consisting of the president, secretary and Dr. Brown, meet with a committee from the Columbus Board of Trade to make arrangements for conducting the home-coming.

Messrs. Lattimer and Bassell, president and secretary, respectively, of the Columbus Board of Trade, appeared before the Board and expressed their desire to co-operate with it in any manner in arranging for the home-coming.

The secretary presented and read the resignation of Mr. A. F. Burgess as chief inspector of the Division of Nursery and Orchard Inspection, and on motion it was agreed that action on this matter be deferred until the following day.

The secretary stated that, as many county agricultural societies were not holding their annual elections in accordance with the rules of this Board, he had prepared a letter to each society so offending, calling its attention to these irregularities. He further stated that he had received many replies to his letters, and inasmuch as these societies generally reported that the present rule regarding the time of holding said elections was detrimental to their interests, he suggested that the rules be so amended that these elections could be held at the discretion of the county societies. Mr. McFarland moved that the rules be so amended as suggested by the secretary; provided, however, that no reorganization of county societies be held until after the annual meeting of the Ohio State Board of Agriculture.

Mr. Miller moved to amend the resolution by referring the matter to a committee consisting of the secretary and three members of the Board. The motion prevailing, Dr. Brown moved that the committee consist of Mr. Kilgore, Mr. Ganson, Mr. Sandles and the secretary. The motion was adopted.

The secretary read the report of the building committee, which, on motion of Dr. Brown, was accepted, and it was ordered that the committee be continued according to its powers of creation.

The secretary reported that the Columbus Horse Sales Company, which had secured the horse building for the purpose of holding sales next month, was advertising a horse show to be held two days preceding the advertised dates of its sale.

Mr. Taylor moved that the same rental per day be charged the company for its proposed horse show as will be in force during each sales day. The motion was unanimously adopted.

At 10:30 o'clock, on motion of Mr. Miller, the Board recessed until 8:00 o'clock a. m., Tuesday, February 19.

TUESDAY, February 19, 1907.

The Board reconvened at 8:00 o'clock a. m., with all members present.

On motion of Mr. Ganson, Mr. W. W. Farnsworth was appointed as chief of the Division of Horticulture for one year, to February 1, 1908, at the same compensation he is now receiving.

Mr. Ganson moved that the matter of changing gates and placing new turnstiles be referred to the president and secretary, with power to act. The motion was adopted.

Dr. Brown moved that the matter of securing seats for grandstand be referred to the building committee, with power to act. The motion was adopted.

On motion of Mr. Ganson it was agreed that the sum of five thousand dollars be appropriated for advertising the Ohio State Fair of 1907.

At 9:00 o'clock a. m., on motion of Mr. Ganson, the Board recessed until 9:30 o'clock a. m., at which hour it reconvened and proceeded to the transaction of business.

On motion of Mr. Cromley the secretaries were constituted a committee on free feature attractions, and the sum of one thousand dollars was appropriated to secure these attractions.

The matter of appointing a chief of police for the coming fair was discussed, and on motion of Mr. Ganson a committee, consisting of the president, secretary, Mr. Cromley and Mr. Sandles, was appointed to take charge of this matter, with power to act.

After thoroughly discussing the matter of charging for exhibition space in the machinery department, Mr. Ganson moved that a committee, consisting of the president, secretaries and member in charge, be appointed to replat the grounds and buildings and to establish a schedule of prices for said space; provided, however, that the maximum charge be five cents per square foot and the minimum charge be one cent per square foot, according to the discretion of the committee. The motion was carried unanimously.

Mr. Cromley moved that the matter of charging for exhibition space in the other non-premium departments of the Fair be referred to the secretaries and members in charge, with full authority to establish a schedule of prices. The motion prevailed.

At 12:00 o'clock m. the Board recessed until 1:00 o'clock p. m., at which time it reconvened and proceeded to the transaction of business.

Mr. Ganson moved that an invitation be extended to Hon. Theodore

Roosevelt, president of the United States, to visit the coming Fair, and that a committee, consisting of the president, secretary and Dr. Brown, be authorized and instructed to confer with the governor and the officers of the Columbus Board of Trade relative to having a committee visit Washington and extend an invitation to the president. The motion prevailed.

The president announced that the next in order would be the revision of the premium list, and that the various departments would be taken up in their respective order.

Mr. Ganson submitted certain changes which he recommended be made in the horse department, which, on motion, were adopted. He further recommended that a maximum amount of ten thousand dollars be offered in speed purses, which recommendation was adopted.

Mr. Kilgore submitted certain changes which he recommended be made in the cattle department, which, on motion, were adopted.

Dr. Brown submitted certain changes which he recommended be made in the swine department, which, on motion, were adopted.

Mr. McFarland submitted certain changes which he recommended be made in the sheep department, which, on motion, were adopted.

Dr. Brown moved that the member in charge of the sheep department be authorized to make a schedule of premiums for Angora goats, the amount of same not to exceed sixty-eight dollars. The motion prevailed.

Mr. Ganson moved that the revision of the poultry list be referred to the member in charge of that department and the secretary, and that the premiums be increased not to exceed two hundred dollars over that offered last year. The motion was adopted.

Upon recommendation of Mr. Miller it was agreed that premiums in the fruit department be increased one hundred dollars; premiums on corn be increased 10 per cent., and vegetables be increased 50 per cent. over the amounts offered last year.

On motion of Mr. Ganson it was agreed that the revision of the premium list in the woman's and art departments be left with the member in charge and the secretaries.

Mr. Ewart recommended that certain improvements be made in the machinery department, and on motion of Mr. Cromley it was agreed that these matters be left in the hands of the building committee and the member in charge, with power to act.

Mr. Sandles moved that women be admitted to the State Fair on Monday, September 2, for twenty-five cents. The motion prevailed.

Mr. Ganson moved that no exhibitor in the horse or cattle department shall occupy more than fifty stalls. The motion was adopted.

Mr. Cromley moved that the matter of transportation, etc., be left to the home-coming committee, which motion prevailed.

Mr. Sandles moved that entry fees in the live stock and poultry departments be increased to 10 per cent. of the first premium. The motion was carried.

The secretary presented and read a letter from Mrs. Nellie Dixon, relative to exhibiting an airship at the coming Fair. On motion the matter was referred to the committee on special attractions.

Mrs. Young appeared before the Board relative to exhibiting and operating an old loom in one of the buildings during the continuance of the coming Fair. On motion the matter was referred to the secretary and member in charge of the woman's department, with power to act.

The secretary presented and read a proposition from A. Roy Knabenshue, relative to giving airship exhibitions and flights at the coming Fair. On motion of Mr. Kilgore it was agreed that no airship be engaged as an attraction at the coming Fair.

At 5:15 o'clock p. m., on motion of Mr. Ganson, the Board took a recess until 8:00 o'clock a. m., February 20.

WEDNESDAY, February 20.

The Board resumed its session at 8:00 o'clock a. m., with all members present, except Mr. Bailey, Vice-President Ganson presiding.

On motion of Mr. Sandles the resignation of Mr. A. F. Burgess as chief inspector of the Division of Nursery and Orchard Inspection was accepted, to be effective March 1.

Mr. McFarland moved that the matter of appointing a chief inspector of the Nursery and Orchard Division be left in the hands of the secretary and Mr. Miller, with power to act. The motion prevailed.

Dr. Brown moved that the committee appointed for the purpose of revising rules of the Board relative to county agricultural society elections be not required to make report until the next meeting of the Board. The motion prevailed.

Mr. Sandles, as chairman of the auditing committee, presented and read a schedule of prices for concessions at the coming Fair, and moved its adoption. The motion was carried unanimously.

Mr. Ganson moved that an invitation be extended to the presidents, secretaries and lecturers of the county farmers' institutes, to visit the Fair and form an organization, and that the arrangements for this be left in the hands of the secretary. The motion prevailed.

At 11:00 o'clock a. m., on motion of Mr. Cromley the Board adjourned to meet on call of the president.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, OHIO, March 28, 1907.

The Ohio State Board of Agriculture met at 2:00 o'clock p. m., President Bailey presiding and all members present.

The minutes of the preceding meeting were read and approved.

Mr. Sandles, as chairman of the committee to amend the rules governing county agricultural societies, presented the report of the committee, which, on motion of Mr. Cromley, was unanimously adopted.

Mr. Bemis, of Columbus, and Mr. Bentley, of Chicago, appeared before the Board and submitted samples and prices of chairs to be used in seating new grandstand. After a thorough discussion it was agreed that the purchasing of seats for grandstand be left in the hands of the building committee, with power to act.

On motion of Mr. Cromley, Mr. Sandles was made an additional member of the home-coming committee.

Mr. Cromley moved that the Board appropriate a sum not to exceed five thousand dollars to advertise the Joyous Buckeye Home-Coming, provided, however, that this sum be available only on condition that the Columbus Board of Trade appropriate a like sum for that purpose. The motion prevailed.

Dr. Brown moved that the Board confirm the action of the secretary and Mr. Miller in employing Mr. C. W. Malley as chief inspector of the Nursery and Orchard Division for a term of one year at a salary of sixteen hundred dollars per annum. The motion was carried unanimously.

The secretary presented and read a letter from the American Shorthorn Breeders' Association relative to a special offer on Shorthorn cattle at the 1907 Ohio State Fair. It was unanimously agreed that inasmuch as the Board had already fixed the classification no further changes in same could be made.

Mr. Miller moved that the matter of making plats for sewers on the Ohio State Fair grounds be referred to the secretary, with power to act. The motion prevailed.

The secretary presented and read a letter from Joseph E. Wing relative to growing a crop of alfalfa on the State Fair grounds as an exhibit during the coming Fair. Dr. Brown moved that the proposition of Mr. Wing be accepted and the suggestions of Professor Price be complied with. The motion was carried unanimously.

The secretary reported that the committee appointed to establish a schedule of prices for exhibition spaces in the non-premium departments of the Ohio State Fair was unanimously agreed as follows:

All exhibition space in the manufactural, carriage, music and merchandise departments to be charged for at the rate of five cents per square foot. Exhibition space in the three machinery halls to be sold at a nominal fee per square foot, ranging in price from ten dollars to forty dollars per space, according to location. Each exhibitor purchasing space in any of the above named departments to be entitled to five admission tickets. No charge to be made for exhibition space on the open lots, but each exhibitor showing there to be required to purchase five admission tickets (price $2.50) upon the installation of the exhibit. Helpers' tickets to be furnished free of charge in all departments.

On motion of Mr. Ewart the report was unanimously adopted.

At 6:30 o'clock p. m., on motion of Dr. Brown, the Board recessed to meet at 11:00 o'clock a. m., Friday, March 29.

FRIDAY, March 29.

The Board reconvened at 11:00 o'clock with all members present, except Messrs. Ganson and Taylor.

Mr. J. S. Maclean, who made changes in the offices of the Department in November, 1905, appeared before the Board relative to settlement for same. His bill being in excess of the appropriation made by the State Emergency Board for this purpose, Dr. Brown moved that he be paid the sum now remaining in the appropriation and settlement be deferred until further consideration. The motion prevailed.

Messrs. Lattimer and Harmon, of the Columbus Board of Trade, and Mayor Badger, who had been invited to meet with the Board, were admitted to the session, and plans for the Joyous Buckeye Home-Coming were discussed.

At 12:30 o'clock p. m., there being no further business before the Board, on motion it adjourned to meet on call of the president.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, OHIO, April 30, 1907.

The Ohio State Board of Agriculture met at 10:00 o'clock a. m., all members being present except Mr. Taylor, President Bailey presiding.

The minutes of the preceding meeting were read and approved.

The secretary stated that the Columbus Horse Sales Company, under whose auspices the recent horse sale was conducted on the Fair Grounds, had failed to conform to the terms of its contract, inasmuch as it had not restored the building to its former condition before these sales. He further stated that he had communicated with the officers of the company, calling attention to its neglect, but received no satisfactory reply. On motion of Mr. Ganson the secretary was instructed to enforce the terms of the contract.

The secretary also presented a proposition from this company relative to purchasing electric wiring which it had installed in the horse building. It being the opinion of the Board that it would be inadvisable to purchase this wire, the secretary was so instructed to notify the company.

Mr. C. W. Malley, recently appointed chief inspector of the Nursery and Orchard Division, was invited to meet the Board, and in a few well chosen remarks gave an outline of the work of this Division.

At 12:30 o'clock p. m., on motion of Mr. Cromley, the Board recessed until 2:30 o'clock p. m., at which hour it reconvened and proceeded to the transaction of business.

Mr. Ross, representing the Ohio Shorthorn Breeders' Association, appeared before the Board and requested that certain changes be made in the Shorthorn classifications this year, to conform to the classifications of the American Shorthorn Breeders' Association, that the special premiums offered by this latter association be available to Ohio breeders. He stated that the Ohio breeders would contribute the premium moneys for these additional classifications, and asked that the Board accept this offer and insert it in the premium list.

On motion of Mr. Brown the offer of the Ohio Shorthorn Breeders' Association was accepted, and it was ordered that this revised classification be inserted in the premium list.

After thoroughly discussing the matter of contracting for a special feature attraction at the coming Fair, the Board being of the opinion that no better drawing card could be secured than the new Knabenshue passenger carrying airship, Mr. Ganson moved that the Board rescind its former action relative to engaging an airship and that a committee of five, including the two secretaries, be appointed to take up this matter with Mr. Knabenshue, with power to expend a sum not to exceed three thousand dollars for this purpose. On roll call the motion was unanimously adopted.

President Bailey announced the following committee: Messrs. Miller, Cromley and Kilgore.

Mr. Sandles moved that at the next meeting of the Board the institute committee make its report relative to recommending institute lecturers for the season of 1907-1908. The motion was agreed to.

The L. M. Jones Photo Co., of Columbus, submitted a proposition for the exclusive photographic and aerial advertising privilege during the coming Fair. In lieu of this privilege it agreed to furnish the Board a birdseye photo of the grounds, not less than 20x40 inches or larger than 30x60 inches in size, and also give six days aerial advertising of the Fair in the city of Columbus. On motion of Mr. Cromley the proposition was accepted.

Mr. Sandles moved that special invitations to attend the Joyous Buckeye Home-Coming be extended to all congressmen and other prominent Ohioans. The motion prevailed.

At 4:15 o'clock p. m., on motion, the Board adjourned to meet on call of the president.

HOTEL BREAKERS, CEDAR POINT, OHIO, June 22, 1907.

The Ohio State Board of Agriculture met at 7:30 o'clock p. m., with all members present and President Bailey in the chair.

The minutes of the preceding meeting were read and approved.

The secretary presented and read a communication from the Concrete Steel Company, requesting an extension of the time limit on construction of grandstand, owing to the unfavorable weather experienced during the process of construction.

The committee appointed to select a chief of police for the 1907 State Fair reported that R. R. Grieve, of Xenia, had been appointed to that position. On motion of Dr. Brown it was agreed that the compensation of policemen be two dollars and fifty cents per day, and that each member of the Board be accorded the privilege of recommending three members of the force.

The institute committee, through its chairman, Dr. Brown, submitted the following report relative to the assignment of institutes and the employment of lecturers for the season of 1907-'08:

To the President and Members of the Ohio State Board of Agriculture:

Gentlemen:—Your Institute Committee has made the following recommendations for Farmers' Institutes and the employment of lecturers during the season of 1907-08, and respectfully submits the same for your approval:

County and Town.

ADAMS—
North Liberty,
Peebles,
Wamsley.

ALLEN—
Delphos,
Spencerville,
Bluffton,
Lafayette.

ASHLAND—
Jeromeville,
Loudonville,
Nova,
Polk.

ASHTABULA—
Andover,
Geneva,
Orwell,
Pierpont.

ATHENS—
Albany,
Amesville,
Athens,
Coolville.

County and Town.

AUGLAIZE—
Buckland,
Waynesfield,
New Knoxville,
New Bremen.

BELMONT—
Barnesville,
Colerain,
Lloydsville,
Morristown,

BROWN—
Decatur,
Fayetteville,
Mt. Orab,
Sardinia.

BUTLER—
Collinsville,
Monroe,
Oxford,
Hamilton.

CARROLL—
Carrollton,
Magnolia,
Malvern,
Sherodsville.

County and Town.

CHAMPAIGN—
Kingscreek,
Magrew,
Mechanicsburg,
Mingo.

CLARK—
Catawba,
Donnelsville,
Selma,
Tremont City.

CLERMONT—
Newtonsville,
Milford,
Bethel,
Felicity.

CLINTON
Clarksville,
New Vienna,
Wilmington,
Sabina.

COLUMBIANA—
Damascus,
Lisbon,
New Waterford,
Rogers.

County and Town.

COSHOCTON—
Fresno,
Nellie,
Keene,
New Guilford.

CRAWFORD
Bucyrus,
Galion,
Tiro,
Crestline.

CUYAHOGA—
Brecksville,
Dover,
Mayfield,
Strongsville.

DARKE—
Arcanum,
Gettysburg,
New Madison,
Palestine.

DEFIANCE—
Defiance,
Farmer,
Hicksville,
Sherwood.

County and Town.

DELAWARE—
- Delaware,
- Sunbury.

ERIE—
- Berlin Heights,
- Castalia,
- Milan.

FAIRFIELD—
- Amanda,
- Baltimore,
- Bremen,
- Carroll.

FAYETTE—
- Good Hope
- Jeffersonville,
- Moons,
- Washington C. H.

FRANKLIN—
- Groveport,
- Hilliard,
- Pleasant Corners,
- Westerville.

FULTON—
- Delta,
- Fayette,
- Swanton,
- Wauseon.

GALLIA—
- Boggs (Bethesda Church),
- Eno (R. R. Sta. Bidwell),
- Rio Grand,
- Vinton.

GEAUGA—
- Middlefield,
- Thompson,
- Burton.

GREENE—
- Bellbrook,
- Cedarville,
- Jamestown,
- Yellow Springs.

GUERNSEY—
- Antrim,
- Byesville,
- Cumberland,
- Fairview.

County and Town.

HAMILTON—
- Blueash,
- Glendale,
- Harrison,
- Newtown.

HANCOCK—
- Arcadia,
- McComb,
- Benton Ridge,
- Arlington.

HARDIN—
- Ada,
- Forest,
- Kenton.

HARRISON—
- Freeport,
- Jewett,
- Piedmont,
- Scio.

HENRY—
- Deshler,
- Holgate,
- Sharon Church,
- Florida.

HIGHLAND—
- Hillsboro,
- Mowrystown,
- Rainsboro,
- Leesburg.

HOCKING—
- Laurelville,
- Logan.

HOLMES—
- Holmesville,
- Killbuck.

HURON—
- East Townsend,
- Greenwich,
- North Fairfield,
- Wakeman.

JACKSON—
- Cove,
- Jackson,
- Rockyhill,
- Wellston.

JEFFERSON—
- Bloomingdale,
- Mt. Pleasant,
- Richmond,
- Smithfield.

County and Town.

KNOX—
- Ankenytown,
- Esto,
- Centerburg,
- Mt. Vernon.

LAKE—
- Painesville,
- Perry.

LAWRENCE—
- Arabia,
- Labelle,
- South Point.

LICKING—
- Brownsville,
- Croton,
- Utica,
- Summit Station.

LOGAN—
- Degraff,
- East Liberty,
- Rushsylvania,
- Bellefontaine.

LORAIN—
- Columbia Center,
- North Ridgeville,
- Pittsfield,
- Rochester.

LUCAS—
- Berkey,
- Monclova,
- Richfield Center,
- Whitehouse.

MADISON—
- London,
- Mt. Sterling,
- Plain City,
- West Jefferson.

MAHONING—
- Berlin Center,
- Canfield,
- North Jackson,
- North Lima.

MARION—
- Agosta,
- Caledonia,
- Marion,
- Waldo.

MEDINA—
- Chatham,
- Hinckley,
- Poe,
- Brunswick.

County and Town.

MEIGS—
- Chester,
- Dyesville,
- Racine,
- Rutland.

MERCER—
- Celina,
- Coldwater,
- Ft. Recovery,
- Neptune.

MIAMI—
- Bethel,
- Casstown,
- Piqua,
- West Milton.

MONROE—
- Beallsville.

MONTGOMERY—
- Centerville,
- Germantown
- Trotwood,
- Vandalia.

MORGAN—
- Chesterhill,
- Cloud,
- Pleasant Valley.

MORROW—
- Iberia,
- Marengo,
- Mt. Gilead,
- Cardington.

MUSKINGUM—
- Adamsville,
- Norwich,
- White Cottage,
- Chandlersville.

NOBLE—
- Dexter City,
- Sharon,
- Summerfield,
- Renrock.

OTTAWA—
- Elmore,
- Port Clinton.

PAULDING—
- Antwerp,
- Haviland,
- Payne,
- Oakwood.

County and Town.

PERRY—
Glenford,
Rehoboth,
Sayre,
Unity.

PICKAWAY—
Ashville,
Derby,
Tarlton,
Williamsport.

PIKE—
Beaver,
Latham,
Piketon,
Tennyson.

PORTAGE—
Garrettsville,
Randolph.

PREBLE—
Camden,
Eaton,
West Manchester,
New Paris.

PUTNAM—
Continental,
Kalida,
Leipsic,
Rimer.

County and Town.

RICHLAND—
Adario,
Bellville,
Butler,
Lucas.

ROSS—
Bainbridge,
Frankfort,
South Salem.

SANDUSKY—
Bellevue,
Clyde,
Fremont.

SCIOTO—
Haverhill,
Scioto,
Mount Joy.

SENECA—
Bloomville,
Fostoria,
Greenspring,
Tiffin.

SHELBY—
Jackson Center,
Sidney.

County and Town.

STARK—
Marlboro,
New Berlin,
Osnaburg,
Wilmot.

SUMMIT—
Copley Center,
Nimisila,
North Springfield,
Bath.

TRUMBULL—
Fowler,
Newton Falls,
Mesopotamia,
Vienna.

TUSCARAWAS—
Gilmore,
Mineral City,
Sugar Creek,
Fiat.

UNION—
Marysville,
Richwood,
Milford Center,
York.

VAN WERT—
Convoy,
Van Wert,
Venedocia.

County and Town.

VINTON—
New Plymouth,
Wilkesville.

WARREN—
Lebanon,
Mason,
Morrow,
Waynesville.

WASHINGTON—
Bartlett,
Lowell,
Lower Salem,
Watertown.

WAYNE—
Creston,
Shreve,
Orrville,
Wooster,

WILLIAMS—
Bryan,
Montpelier,
West Unity.

WOOD—
Bloomdale
Prairie Depot,
Tontogany,
Perrysburg.

WYANDOT—
Nevada,
Upper Sandusky,
Sycamore.

LECTURERS.

F. L. Allen, Kinsman, Ohio.
S. J. Baldwin, Tallmadge, Ohio.
John Begg, Columbus Grove, Ohio
Frank Blackford, Eldorado, Ohio.
J. S. Brigham Bowling Green, Ohio.
J. L. Buchanan, Sherodsville, Ohio.
William H. Culbertson, New Concord, Ohio.
J. P. Davis, Sheridan, Ind.
J. Al. Dobie, Wapakoneta, Ohio.
W. G. Farnsworth, Waterville, Ohio.
W. W. Farnsworth, Waterville, Ohio.
J. F. Gordon, Jamestown, Ohio.
John Gould, Aurora Station, Ohio.
D. D. Harsh, Minerva, Ohio.
R. A. Hayne, Adena, Ohio.
G. C. Houskeeper, Bowling Green, Ohio.
A. A. Huber, Hicksville, Ohio.
Solomon Johnson, Stryker, Ohio.
A. H. Judy, Castine, Ohio.

Charles McIntire, Chandlersville, Ohio.
Horatio Markley, Mt. Gilead, Ohio.
Cary W. Montgomery, Newark, Ohio.
Allen O. Myers, Worthington, Ohio.
J. W. Nicodemus, Van Wert, Ohio.
Ernest J. Riggs, Columbus, Ohio.
Lowell Roudebush, New Richmond, Ohio.
George E. Scott, Mt. Pleasant, Ohio.
John L. Shawver, Bellefontaine, Ohio.
L. G. Spencer, Warren, Ohio.
S. E. Strode, R. R. 1, Pennsville, Ohio.
M. C. Thomas, Mingo, Ohio.
Edward Van Alstyne, Kinderhook, N. Y.
C. R. Wagner, Arlington, Ohio.
Joseph E. Wing, Mechanicsburg, Ohio.
Willis O. Wing, Mechanicsburg, Ohio.
W. D. Zinn, Philippi, W. Va.
John T. Brown, Mechanicsburg, Ohio.
J. C. Sidle, Blachleyville, Ohio.
H. P. Miller, Sunbury, Ohio.
J. P. Hine, Shinrock, Ohio.

Respectfully submitted,

H. M. BROWN, Chairman.
WM. MILLER,
L. W. KILGORE.

On motion of Mr. Cromley the report was adopted.

On motion of Mr. Cromley the secretary was instructed to notify the C., C., C. & St. L. Railway Company that the Board would require it to comply with the terms of its contract relative to the transportation of passengers from the Union station to the Fair Grounds.

On motion of Mr. Ganson the secretary was instructed to communicate with the various railway companies relative to securing special rates for the Joyous Buckeye Home-Coming.

At 10:15 o'clock, there being no further business before the Board, it adjourned to meet on call of the president.

Department of Agriculture,
Columbus, Ohio, August 9, 1907.

The Ohio State Board of Agriculture met at 10:00 o'clock a. m., all members being present and President Bailey in the chair.

The minutes of the preceding meeting were read and approved.

Mr. Dana, of the firm of The Bell-Dana Company, appeared before the Board and stated that through a misunderstanding of the price he did not secure the space he had occupied in the Tenth Department for the past several years. Mr. Ramsey, superintendent of that department, stated that inasmuch as he had received no application from this firm for space no reservation had been made, and space in question had been assigned to another firm. On motion of Mr. Ganson the matter was referred to the member in charge and superintendent of that department, and the secretaries, for adjustment.

Mr. Patton, agent of the C., C., C. & St. L. Ry., appeared before the Board relative to train service during the continuance of the Fair, and agreed to stop all regular accommodation trains at the Fair Grounds, beside the extra train provided for State Fair traffic. After a thorough discussion of the matter, Dr. Brown moved that the Board request the management of the C., C., C. & St. L. Ry. to run trains from the Union station to the Fair Grounds at half hour intervals from 9:30 o'clock a. m. until 1:00 o'clock p. m., daily; then beginning at 4:00 o'clock run trains at the same intervals until 6:00 o'clock p. m. The motion was unanimously agreed to.

Mr. Pugh, in charge of the prize drills, appeared before the Board and requested that prize drills for mounted troops be added to the program. On motion of Dr. Brown the matter was referred to the home-coming committee, with power to act.

At 12:15 o'clock, on motion of Mr. Cromley, a recess was taken until 4:00 o'clock for the purpose of visiting the Fair Grounds.

At 4:00 o'clock p. m. the Board reconvened and proceeded to the transaction of business.

The secretary reported that some old machinery, gas tank, etc., was occupying space on the Fair Grounds which was needed for other purposes, and suggested that some disposition be made of same. On motion of Mr. Cromley the matter was referred to the secretary and Mr. Taylor, with power to act for the Board.

Mr. Holbrook, architect, submitted the following report of the completion of grandstand:

To the Honorable State Board of Agriculture:

Gentlemen:—I have this day accepted the reinforced concrete work on the grand stand, executed by the Concrete Steel Company, and approved estimate No. 5 for the sum of $4,055.29 as final estimate for the same.

I affirm that said work, done under my supervision,, is in full compliance with the plans and specifications prepared by me, and that said construction is safe and of ample strength to carry the load as figured; and that said construction has had sufficient time to season to remove all doubts of failure of same.

[Signed] HARRY C. HOLBROOK, Architect.

Mr. Sandles moved that the Board, having visited the Fair Grounds and inspected the grandstand, on the written recommendation of Mr. Holbrook, architect, the concrete work on same be hereby accepted and a voucher for four thousand and fifty-five dollars and twenty-nine cents ($4,055.29) ordered drawn and paid to the contractors, The Concrete Steel Co. The motion was duly seconded by Mr. Cromley, and on roll call all members voted "aye" and the motion was recorded as being carried unanimously.

Mr. Cromley moved that the payment of seven hundred and sixty-four dollars ($764), amount in full for concrete work on judges' and timers' stands, be paid to the contractors, The Capitol Construction Co. The motion was duly seconded, and on roll call all members voted "aye," and the motion was recorded as being carried unanimously.

Mr. Cromley moved that the concession granted for the Igorrote exhibition be located on the plat of ground immediately north of the horse building, at the intersection of the two driveways. The motion prevailed.

Dr. Brown moved that the Board invite all presidents and secretaries of farmers' institutes, and presidents and secretaries of county agricultural societies throughout the state, to be present at the headquarters of their respective counties and assist in receiving and welcoming former Buckeyes. The motion prevailed.

At 6:30 o'clock p. m., on motion of Mr. Cromley, the Board adjourned to meet on the Ohio State Fair Grounds, Saturday, August 31.

ADMINISTRATION BUILDING,
STATE FAIR GROUNDS, August 31, 1907.

The Ohio State Board of Agriculture met at 2:00 o'clock p. m., with all members present except Messrs. Sandles, Ganson, Brown and Ewart.

The matter of charge to be made for box seats in grandstand was discussed, and on motion of Mr. Cromley it was agreed that a charge of fifty cents per chair be made for each box, or five dollars per box per day; provided, however, that two center boxes be reserved for the members of the Board and their invited guests.

The secretary stated that the Old Guard, an organization composed of veterans of the Civil War, made request that they be admitted to the grounds free of charge on Friday—Veterans' Day. On motion the matter was referred to the president, secretary and treasurer, with power to act.

After discussing informally several matters pertaining to the home-coming and State Fair, at 3:00 o'clock p. m., on motion, the Board adjourned to meet on call of the president.

ADMINISTRATION BUILDING,
STATE FAIR GROUNDS, September 6, 1907.

The Board met at 4:30 o'clock p. m., with all members present except Mr. Miller.

The secretary stated that the purpose of the meeting was to consider protests entered against awards in the horse and cattle departments. The first protest considered was that of Hull Bros. in the cattle department. On motion of Mr. Cromley and recommendation of Mr. Kilgore, member in charge of the cattle department, protest was laid on the table.

Leonard & Co. entered protest against award made to the Hartman Stock Farm on stallion two years and under three in Book 8, claiming that said animal was ineligible to compete in the two-year-old class. On motion of Mr. Ganson the secretary was instructed to withhold payment of said premium until he could ascertain the age of said horse, and should he find that the protested animal was ineligible to compete in the two-year-old class first premium should be awarded to Leonard & Co.

The secretary presented a communication from W. A. Lyle & Son, in which they stated that owing to a railroad wreck they were unable to reach Columbus and they requested the return of their entrance fees. On motion of Mr. Ganson it was agreed that their entrance fees be refunded.

Mr. McFarland stated that Mr. Henderson, an exhibitor of Dorset sheep, had, through unavoidable circumstances, been unable to reach Columbus, and on his motion the Board agreed to refund his entrance fees.

The secretary presented and read a communication from Mr. Rudolph, relative to the prize home-coming song. Dr. Brown moved that, inasmuch as the words of said song were not original, it be rejected. The motion prevailed.

At 5:00 o'clock p. m., on motion, the Board adjourned to meet at the Department of Agriculture, at 10:00 o'clock a. m., Saturday, September 21.

Department of Agriculture,
Columbus, Ohio, September 21, 1907.

The Ohio State Board of Agriculture met at 10:00 o'clock a. m., with all members present except Messrs. Sandles, Ganson and McFarland, President Bailey in the chair.

The minutes of the three preceding meetings were read and approved.

The secretary presented and read an estimated statement of the receipts and expenditures of the 1907 State Fair, which, on motion, was ordered placed on file.

The secretary presented and read a letter from Mr. T. C. Harbaugh, Casstown, Ohio, in which he demanded payment for the publication in a recent edition of one of the Columbus city dailies of an original poem he had submitted for competition in the home-coming prize poem contest. On motion of Dr. Brown it was agreed that Mr. Harbaugh be compensated in the sum of ten dollars for publication of said poem.

The secretary stated that the Montgomery County Agricultural Society had made request for its per capita allowance for 1906, and wished to know the pleasure of the Board regarding the issuance of same. After thoroughly discussing the matter, on motion, the following resolution was unanimously adopted:

Resolved, That inasmuch as the Montgomery County Agricultural Society has failed to comply with the rule of the Ohio State Board of Agriculture requiring a report to be filed with said Board embracing the offers and awards of premiums, receipts, disursements, etc., of the past year; also a statement that the rules of the State Board of Agriculture and the laws of Ohio pertaining to county agricultural societies have been properly complied with, signed and sworn to by the secretary, therefore the Board deems itself powerless to issue per capita certificate.

The secretary presented a communication from the Ohio branch of the American Poultry Association, in which it requested the loan of the state's poultry coops for its annual exhibition to be held in Columbus, January next. On motion of Dr. Brown the matter was left in charge of the secretary and Mr. McFarland, with power to act.

The matter of carrying insurance on the recently constructed grandstand on the Fair Grounds was discussed, and it was unanimously agreed that no insurance be carried on these structures.

After a thorough discussion of the matter of improving roadways on the State Fair Grounds, Dr. Brown moved that the secretary be instructed to investigate the best method of improving said roadways and the cost of same, and that he further be empowered to adopt such method of improvement which in his judgment would be most satisfactory. The motion prevailed.

On motion of Mr. Kilgore the Board recessed until 1:30 o'clock p. m., at which time it reconvened and proceeded with the transaction of business.

Mr. C. W. Malley, chief inspector of the Division of Nursery and Orchard Inspection, appeared before the Board and gave an extended account of the work of his department. In the course of his remarks Mr. Malley stated that the matter of employing competent deputies at the present salary allowance was becoming serious, inasmuch as the U. S. Government was offering much better inducements to these men, and suggested that the salary of Mr. William E. Evans, present deputy inspector, be increased to $75 per month. commencing November 1st next, and that his position carry with it the title of chief deputy inspector. Mr. Miller moved that the request of Mr. Malley be granted and his motion was adopted unanimously.

Dr. Brown moved that a joint meeting of the institute instructors and the Board be held in Columbus two days of the week following the national meeting of Institute Workers at Washington, D. C., and that the program for this meeting be prepared by the institute committee. The motion was adopted.

Mr. Cromley moved that the institute committee of the Board be instructed to attend the national meeting at Washington, D. C. The motion was adopted.

At 4:00 o'clock p. m., on motion of Mr. Kilgore, the Board adjourned to meet upon call of the president.

Department of Agriculture,
Columbus, Ohio, December 20, 1907.

The Ohio State Board of Agriculture met at 11:30 o'clock a. m., all members being present except Mr. Taylor, President Bailey in the chair. The minutes of the preceding meeting were read and approved.

The secretary stated that the dates assigned for the 1908 State Fair by the American Association of Fairs and Expositions were August 31, September 1, 2, 3 and 4. On motion of Mr. Cromley these dates were ratified.

On motion of Mr. Miller the appointment of a chief inspector of the Nursery and Orchard Division was postponed until the January meeting.

Mr. Sandles moved that the president, secretary and Mr. Cromley constitute the building committee for the coming year and that when improvements pertaining to the different departments are made, the member in charge of that particular department be advisory member to that committee. The motion prevailed.

After thoroughly discussing needed improvements on the State Fair Grounds it was the sense of the Board that the following structures be added to the building equipment:

Gentlemen's public comfort building; nurse cow barn; educational building for exhibits of experiment station; State University; State Grange and State Library. It was also decided to equip the grounds with covered walks leading to the various exhibition buildings.

At 12:20 o'clock p. m., on motion, the Board recessed until 1:30 o'clock p. m., at which time it reconvened and proceeded to the transaction of business.

On motion of Dr. Brown the secretary was instructed to notify all county agricultural societies, where elections of officers have been held illegally, and not in accordance with the rules of the State Board, that the positions of directors be declared vacant and new elections ordered. The motion was unanimously adopted.

The secretary stated that it had come to his knowledge that the Smith Agricultural Chemical Company, of Columbus, was placing upon the markets of the state commercial fertilizers in violation of the law governing the sale of these products, and after fully stating the facts in his possession, on motion of Dr. Brown the following resolution was adopted by a unanimous vote of the Board:

Resolved, That it is the sense of this Board that the secretary immediately bring action against the Smith Agricultural Chemical Company for fraudulent sale of fertilizers.

The following resolution, introduced by Mr. Sandles, was adopted by a unanimous vote of the Board:

WHEREAS, The members of the Ohio State Board of Agriculture, believing that much good and mutual benefit would result from a meeting and conference of the various State Fair organizations, for the purpose of formulating and proposing rules and regulations that will to some degree bring about uniformity in the conduct of our annual state expositions; therefore be it

Resolved, That the secretary of this Board, T. L. Calvert, be advised to issue a formal invitation to the officers of the several state fairs to meet in the rooms of the Department of Agriculture, State House, in the city of Columbus, January 13, 1908, at 10 o'clock a. m., for the objects and purposes above set forth.

There being no further business before the Board, at 5:00 o'clock p. m., on motion of Mr. Cromley, it adjourned to meet on call of the president.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, OHIO, January 14, 1908.

Pursuant to adjournment the Ohio State Board of Agriculture met at 10:00 o'clock a. m., all members present except Mr. Ganson, President Bailey in the chair. The minutes of the preceding meeting were read and approved.

Messrs. Redkey and Upp, representing the Rainsboro Agricultural Fair and Stock Association, of Highland County, appeared before the Board, and after briefly stating the objects and purposes of the above mentioned association desired to ascertain whether or not it was in the power of this Board to issue per capita certificate to this association as provided by law. After a thorough discussion of the matter the Board decided that inasmuch as said association had not conformed to the laws of the state and the rules of the Ohio State Board of Agriculture governing county agricultural societies, no certificate could be issued at this time.

The secretary presented and read protests against the issuance of per capita certificates to the Butler and Hocking county agricultural societies. On motion of Dr. Brown it was resolved that these certificates be withheld until a hearing could be given to interested parties.

The secretary presented and read a communication from the Franklin County Driving Company, of Columbus, requesting the use of the speed track on the Fair Grounds for a race meeting on Saturday, September 5. On motion the secretary was instructed to notify said company that it would be impossible to grant this request.

The matter of improvements to be made on Fair Grounds during the current year was discussed, and on motion of Mr. Sandles the building committee was authorized to employ Messrs. Dawson & Holbrook as architects to the Board for the year 1908.

On motion of Mr. McFarland the building committee was authorized and instructed to secure plans and specifications for the erection of covered walks, a nurse cow barn and a men's public comfort building, said plans and specifications to be submitted to the Board at its next meeting.

Mr. McFarland moved that a committee be appointed to take up the matter of fertilizer legislation and report at this meeting of the Board. The motion prevailed.

On motion of Dr. Brown the following members were named to constitute this committee: Messrs. Cromley, Bailey and McFarland, with Mr. Sandles as advisory member.

The secretary stated that in accordance with the resolution passed at the last meeting of the Board he had issued a call for State Fair managers to meet here on January 13, but owing to the fact that many of these organizations were holding their annual meetings at this time, it was impossible to secure proper representation; therefore he had notified the various state organizations that the meeting had been postponed until some future date. On motion of Mr. Sandles the secretary was instructed to notify the various state organizations that this meeting would be held here January 24th next, at 10.00 o'clock a. m.

At 11:50 o'clock a. m. the Board recessed until 9:00 o'clock a. m., Wednesday.

WEDNESDAY, January 15, 1908.

At 9:00 o'clock a. m. the Board reconvened with all members present except Messrs. Bailey and Brown, Vice-President Ganson presiding.

Mr. W. A. Shafor appeared before the Board relative to protest filed against the issuance of per capita certificate to the Butler County Agricultural Society, and briefly stated the grounds for said protest. On motion the Board decided that no action could be taken at this time, but that a hearing be given on a future date, and the secretary was instructed to notify the interested parties as to the date of said hearing.

Mr. Taylor read the report of the treasurer for the year 1907, and on motion of Mr. Kilgore it was accepted and ordered placed on file.

Mr. McFarland read the report of the auditing committee for the year 1907, and on motion of Mr. Cromley the report was accepted and ordered placed on file.

At 12:00 o'clock, on motion of Mr. McFarland, the Board recessed until 2:00 o'clock p. m., at which time it reconvened and proceeded to the transaction of business.

A committee representing the Butler County Agricultural Society appeared before the Board relative to the protest which had been filed against said society, and was notified that action on this matter had been deferred until a future meeting of the Board, and that the secretary had been instructed to notify all interested parties as to the date of the hearing of said protest.

At 3:15 o'clock p. m. the Board recessed until 9:00 o'clock a. m., Thursday, January 16.

THURSDAY, January 16, 1908.

The Board reconvened at 9:00 o'clock a. m., all members being present, President Bailey in the chair.

The secretary stated that the Montgomery County Agricultural Society had presented its report for the year 1906, properly attested, but that the words "As nearly as possible for the best interest and success of the Fair" had been inserted in the affidavit. The Board decided that, inasmuch as said Montgomery County Agricultural Society had not conformed strictly to the rules and regulations of the State Board, the secretary be instructed to withhold said per capita certificate.

At 9:40 o'clock a. m., on motion, the Board recessed until 7:30 o'clock p. m., at which hour it reconvened and there being no further business requiring the attention of the Board of 1907 on motion it adjourned.

Crop and Live Stock Statistics

AS ESTIMATED BY THE

OHIO DEPARTMENT OF AGRICULTURE

From Returns Received From Its Corps of Regular Township Crop and Stock Correspondents During the Year 1907.

Under the present system of gathering, compiling and distributing the monthly crop reports, issued by this Department, the Board feels that it is accomplishing much good in promptly informing the farmer as to the condition and prospects of the leading crops of the state from month to month, as from these he can readily determine any over or under-production of the crops named, thus serving as a guide to disposing of his crops to the best advantage as well as aiding him in selecting succeeding crops.

At the present time we have about fifteen hundred volunteer correspondents, who monthly make estimates of crop conditions or prospects on uniform blanks furnished by the secretary, while in the office a large force of clerks and statisticians is engaged in compiling and tabulating these, that they may be given prompt publication. The expense of carrying on the work is small when we consider its importance. That the farmer may receive these quotations as soon as compiled, special advance sheets, giving the totals for the state as a whole, are furnished the press of the state and the leading agricultural journals of the country. The detailed report, giving results by counties, is issued later, and is widely circulated among interested parties.

Published herein are the monthly reports which have special reference to acreage or the total estimated production for the state. Following these reports will be found tables showing wheat and corn production from 1850 to the present year, inclusive, together with the range of prices, the average prices for each year and the same by a series of ten years; tables giving the number of live stock in the state as returned to the auditor of state; agricultural statistics as returned to the secretary of agriculture by county auditors, and ten-year comparative tables of the different crops of the state.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE DISTRIBUTION OF LIVE STOCK, MARCH 1, 1907.

COUNTIES.	No. of townships reported.	*Number of Stallions.						Per cent. of the Different Breeds of Cattle.								
		Thoroughbreds (running horses).	Trotting stock.	French draft.	English draft.	Other pure breeds.	Unknown breeding.	Short horns.	Devons.	Herefords.	Polled Durhams.	Aberdeen Angus.	Red Polls.	Galloways.	Jerseys.	Guernseys.
	No.	No.	No.	No.	No.	No.	No.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Adams	10	....	7	6	3	4	11	25	....	....	2	2	1	....	11	1
Allen	6	1	14	13	4	2	3	12	6	....	8	....	7	3	10	1
Ashland	7	....	6	5	5	6	10	6	3	....	....	3	2	....	9	5
Ashtabula	10	....	4	5	5	5	11	3	....	....	....	1	1	....	11	9
Athens	7	....	3	4	4	....	8	12	1	1	1	1	1	....	12	1
Auglaize	12	5	12	20	8	7	22	14	1	2	3	1	5	1	9	1
Belmont	7	....	1	3	1	....	12	22	2	....	1	3	3	....	13	2
Brown	4	....	4	....	2	1	3	25	1	....	....	5	1	....	15	6
Butler	9	....	6	2	3	5	17	21	2	....	6	....	....	....	14	1
Carroll	8	4	10	1	1	1	2	16	....	1	....	....	1	....	5	2
Champaign	7	1	18	8	4	13	9	20	2	1	5	1	1	3	20	5
Clark	4	....	11	10	1	....	2	12	....	....	2	7	....	....	10	....
Clermont	4	....	6	2	2	1	8	5	....	....	2	....	4	....	21	4
Clinton	6	1	17	6	....	3	18	28	....	....	....	1	....	....	12	1
Columbiana	10	1	13	13	2	2	8	7	1	....	1	....	2	....	19	9
Coshocton	9	1	2	8	2	....	9	18	3	2	1	6	1	....	8	....
Crawford	10	2	7	12	1	2	12	9	2	1	1	4	3	1	8	3
Cuyahoga	6	....	2	1	....	1	2	9	1	....	1	....	4	....	13	7
Darke	15	4	18	25	17	8	37	21	....	....	8	....	2	....	18	1
Defiance	4	....	2	5	2	....	6	10	1	....	5	....	5	....	2	1
Delaware	10	....	13	20	....	6	3	13	2	....	6	2	5	....	18	1
Erie	5	....	1	3	....	2	2	2	....	1	....	....	....	....	4	7
Fairfield	14	....	28	17	7	13	15	19	3	....	1	6	2	....	17	1
Fayette	6	....	9	10	1	....	4	25	4	....	....	4	1	....	7	....
Franklin	13	....	15	22	2	4	20	15	1	....	2	2	2	2	21	3
Fulton	4	....	5	5	2	5	1	4	....	1	3	....	....	....	5	10
Gallia	10	2	4	13	5	8	28	15	3	1	2	4	7	....	17	1
Geauga	9	2	8	6	3	4	3	4	....	....	....	....	....	....	6	20
Greene	7	2	31	14	12	14	10	26	1	....	1	9	1	....	10	1
Guernsey	8	1	1	4	2	....	2	26	6	2	2	7	5	....	10	....
Hamilton	8	3	3	....	4	1	11	4	....	....	1	2	....	....	27	3
Hancock	11	....	3	4	7	9	7	15	1	1	1	....	1	....	7	2
Hardin	8	6	20	13	12	4	20	17	6	....	2	2	2	1	12	1
Harrison	14	1	8	18	6	2	4	32	1	....	1	3	1	....	17	5
Henry	4	....	6	1	3	3	3	13	5	2	9	4	2	1	10	4
Highland	13	2	16	12	4	5	31	22	2	....	1	4	1	....	11	2
Hocking	5	....	1	....	....	1	1	11	2	2	1	2	8	....	17	....
Holmes	6	1	9	6	1	3	2	14	1	....	10	....	....	....	14	8

Huron	14	3	31	19	25	3	17	23	4	....	1	3	1	....	9	3
Jackson	6	....	3	4	....	1	4	15	....	2	3	2	8	....	16	5
Jefferson	4	....	4	3	4	2	2	23	3	....	....	....	....	....	18	12
Knox	12	....	13	8	3	3	1	28	3	....	3	3	1	1	12	2
Lake	5	....	3	3	1	1	8	2	....	....	....	....	....	....	8	8
Lawrence	6	2	3	....	....	1	10	16	5	1	....	3	4	....	16	2
Licking	16	....	23	10	9	9	12	24	2	1	1	1	1	....	23	3
Logan	10	....	13	16	6	....	....	17	1	....	4	2	1	....	15	1
Lorain	7	2	12	6	6	7	6	7	2	....	1	....	3	....	10	12
Lucas	6	....	4	3	3	....	....	8	2	....	5	....	2	....	13	9
Madison	8	5	24	12	16	8	12	35	6	....	....	1	....	2	10	....
Mahoning	5	....	4	4	2	2	4	19	....	....	....	....	....	2	31	....
Marion	10	1	10	15	3	1	13	32	1	1	1	4	1	....	12	3
Medina	8	....	5	11	1	2	8	5	....	....	....	....	....	....	12	13
Meigs	6	....	6	4	....	1	5	12	11	2	4	2	7	....	8	1
Mercer	3	....	1	1	1	....	1	7	3	....	3	2	3	....	9	....
Miami	6	2	3	3	2	1	3	6	....	....	3	....	5	....	9	4
Monroe	8	....	....	....	1	2	4	5	3	....	2	....	....	....	7	7
Montgomery	8	....	2	4	3	....	10	15	1	1	5	2	8	....	28	4
Morgan	11	....	8	4	2	2	3	18	1	1	....	....	....	....	19	3
Morrow	13	....	25	20	2	....	4	23	2	....	3	2	2	....	10	2
Muskingum	14	1	4	6	1	6	3	27	2	1	3	3	2	....	9	1
Noble	8	....	5	4	1	2	4	20	7	1	4	6	....	....	9	....
Ottawa	7	....	4	3	....	....	6	1	....	....	1	....	....	....	11	1
Paulding	8	1	4	7	2	2	21	9	1	....	1	....	1	....	13	1
Perry	10	....	4	12	1	....	5	15	....	1	3	1	4	....	9	....
Pickaway	6	1	....	8	....	1	4	13	....	....	....	2	1	....	5	....
Pike	8	....	2	1	4	2	4	22	2	....	1	4	2	....	16	3
Portage	7	1	7	6	1	....	2	6	....	....	....	....	....	....	8	16
Preble	7	....	12	5	6	2	7	18	1	....	2	1	3	....	10	1
Putnam	7	1	8	6	4	8	10	15	3	....	9	3	2	1	10	1
Richland	8	....	3	3	2	....	8	12	3	....	5	2	....	....	11	5
Ross	8	....	1	4	2	2	18	16	3	....	2	2	3	1	14	....
Sandusky	3	....	4	8	3	1	....	20	8	....	5	5	....	3	15	....
Scioto	13	....	4	7	1	2	6	15	4	2	1	....	2	2	30	4
Seneca	12	1	9	15	10	3	7	23	2	....	6	2	1	....	13	2
Shelby	6	....	5	6	3	1	2	11	....	....	4	1	1	3	7	2
Stark	9	....	7	4	5	3	6	16	....	....	1	....	1	....	12	13
Summit	9	....	2	1	1	3	3	10	....	....	....	....	1	....	12	15
Trumbull	9	....	10	6	1	2	5	18	2	....	....	....	....	....	10	17
Tuscarawas	12	1	2	3	3	7	4	21	....	....	1	3	2	....	10	8
Union	6	8	16	18	2	3	2	24	6	....	....	....	4	....	16	2
Van Wert	8	1	7	3	2	5	14	13	1	....	4	1	5	1	9	2
Vinton	7	....	1	1	....	2	....	12	1	....	....	2	1	....	10	....
Warren	7	3	14	6	5	4	17	21	....	....	1	2	....	....	31	4
Washington	10	2	7	6	1	4	7	18	3	....	....	2	1	....	14	....
Wayne	12	....	15	18	12	8	13	16	1	....	4	1	2	....	13	4
Williams	4	....	5	5	2	8	1	16	5	....	3	2	2	....	8	6
Wood	10	....	18	8	8	14	20	16	2	1	4	3	3	1	12	3
Wyandot	9	1	11	10	9	2	4	18	3	....	1	1	3	1	8	6
Total	726	77	732	657	318	288	707	....	....	....	....	....	....	....	....	....
Average per cent	....	....	....	....	....	....	....	15.80	1.96	.38	2.20	1.82	2.00	.32	12.71	3.84

*The number of stallions as given in the table is as reported from 726 townships of the state, and does not, therefore, represent the approximate number in each county or for the state.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE DISTRIBUTION OF LIVE STOCK, MARCH 1, 1907. —Continued.

COUNTIES.	Per cent. of the Different Breeds of Cattle.					Per cent. of the Different Breeds of Swine.									
	Holsteins.	Polled Jerseys.	Other pure breeds.	Grades.	Natives.	Berkshires.	Poland Chinas.	Chester Whites.	Duroc Jerseys.	Victorias.	Suffolks.	Yorkshires.	Essex.	Cheshire.	Mixed or unknown.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Adams	......	......	3	39	16	8	43	12	14	......	......	......	......	3	20
Allen	......	......	......	48	5	5	25	11	16	......	......	......	......	......	43
Ashland	......	......	......	26	46	9	21	9	7	......	......	1	......	......	53
Ashtabula	1	......	......	43	31	10	9	25	1	2	1	1	......	......	51
Athens	......	......	......	61	9	2	39	28	3	......	......	......	......	......	28
Auglaize	1	......	......	39	23	7	30	13	16	......	......	1	......	......	33
Belmont	......	......	1	36	17	13	30	16	7	......	3	......	......	......	31
Brown	......	......	......	8	39	6	46	10	12	......	......	......	......	......	26
Butler	1	1	......	25	29	2	45	6	21	......	1	......	......	1	24
Carroll	1	......	......	59	15	10	34	18	7	......	......	......	......	......	31
Champaign	1	......	1	33	7	12	33	17	16	1	......	1	......	......	20
Clark	......	2	......	60	7	3	24	14	17	......	......	......	......	......	42
Clermont	2	......	5	47	10	4	62	15	4	......	......	......	......	......	15
Clinton	......	......	......	39	19	5	40	5	19	......	......	......	......	......	31
Columbiana	2	......	1	44	14	7	25	15	4	......	......	......	......	......	49
Coshocton	......	......	1	44	16	14	26	11	6	......	......	2	......	1	37
Crawford	1	......	1	32	34	7	21	11	14	1	1	1	......	......	44
Cuyahoga	......	......	......	40	25	6	9	43	......	......	......	1	......	......	41
Darke	......	......	5	28	17	3	38	15	21	......	......	......	......	......	23
Defiance	......	......	......	39	37	6	36	18	7	......	......	......	......	......	33
Delaware	......	1	2	47	3	5	26	13	20	......	......	1	......	......	35
Erie	......	......	......	21	65	6	21	12	......	3	2	16	2	1	37
Fairfield	1	......	......	31	19	12	34	11	11	......	......	......	......	......	32
Fayette	......	......	......	42	17	9	40	6	17	......	......	1	......	......	27
Franklin	3	1	6	18	24	13	26	14	8	......	......	2	......	1	36
Fulton	......	......	......	50	27	8	25	13	16	......	......	......	......	......	38
Gallia	......	......	......	24	26	5	32	23	6	......	......	1	......	......	33
Geagua	2	......	1	54	13	19	8	39	2	......	......	......	......	......	32
Greene	......	3	......	34	14	7	24	11	25	......	......	......	......	......	33
Guernsey	......	......	......	33	9	5	44	25	2	......	......	......	......	4	20
Hamilton	1	......	2	25	35	8	33	13	9	......	......	......	......	......	37
Hancock	......	......	1	36	35	5	37	7	15	......	......	1	......	......	35
Hardin	1	......	......	39	17	5	40	11	15	......	......	......	......	......	29
Harrison	......	......	......	34	6	12	45	16	4	......	......	......	......	......	23
Henry	......	......	......	20	30	11	23	15	10	......	1	5	3	1	31
Highland	......	1	1	26	29	7	31	8	14	......	......	1	......	......	39
Hocking	......	......	6	9	42	9	27	29	8	......	......	2	......	......	25

Holmes	1	....	1	38	13	14	19	16	17	....	....	1	....	1	32
Huron	1	....	....	33	22	6	35	27	7	....	....	2	....	....	23
Jackson	....	2	2	24	21	6	40	20	6	....	....	....	....	....	28
Jefferson	....	....	....	37	7	13	33	22	2	....	3	....	....	....	27
Knox	1	....	....	38	8	15	37	15	9	....	....	1	....	....	23
Lake	....	....	....	47	35	21	1	43	....	....	....	2	....	....	33
Lawrence	2	1	1	16	33	13	26	24	2	....	....	....	1	....	34
Licking	1	....	....	33	10	15	39	13	9	....	....	....	....	....	24
Logan	....	....	....	50	9	6	31	15	12	....	....	....	....	....	36
Lorain	4	....	1	51	9	7	10	8	5	1	2	4	....	2	61
Lucas	....	....	....	27	34	8	32	13	13	....	....	....	....	....	34
Madison	....	....	....	27	19	4	35	8	21	....	....	....	....	....	32
Mahoning	....	....	....	48	....	37	9	11	4	....	....	....	....	....	39
Marion	1	....	....	32	12	8	37	12	17	....	1	3	1	1	20
Medina	1	....	1	56	12	15	10	20	3	....	....	3	....	....	49
Meigs	....	....	....	28	25	6	23	23	5	....	....	....	....	....	43
Mercer	....	....	....	43	30	5	20	15	15	2	....	....	....	....	43
Miami	....	3	....	19	51	4	21	11	14	....	2	1	1	....	46
Monroe	....	....	....	23	53	12	31	20	2	....	....	1	....	1	33
Montgomery	1	1	....	19	15	12	32	16	20	....	....	....	....	....	20
Morgan	....	....	....	37	21	9	30	15	3	....	....	5	5	....	33
Morrow	....	2	....	46	8	5	24	21	10	....	....	1	....	....	39
Muskingum	....	....	....	42	10	23	40	14	2	....	....	....	....	....	21
Noble	1	....	1	36	15	8	35	18	2	....	....	1	....	....	36
Ottawa	....	....	....	28	58	5	25	8	3	....	....	1	....	....	58
Paulding	....	....	3	44	27	7	45	13	12	....	....	....	....	....	23
Perry	2	....	....	43	22	20	28	12	6	....	....	....	....	....	34
Pickaway	....	....	....	66	13	5	36	6	8	....	....	....	....	....	45
Pike	....	....	....	32	18	16	51	9	9	....	....	....	....	....	15
Portage	1	....	....	54	15	17	13	29	....	....	....	....	....	....	41
Preble	....	....	....	48	16	....	38	14	31	....	....	....	....	....	17
Putnam	1	2	5	45	3	9	25	11	20	1	1	1	1	1	30
Richland	....	....	....	41	21	9	31	14	8	....	....	....	....	....	38
Ross	1	....	....	35	23	5	44	2	26	....	....	....	....	....	23
Sandusky	....	....	....	7	37	13	51	5	18	....	....	....	....	....	13
Scioto	1	....	....	19	20	16	36	16	6	....	....	1	....	....	25
Seneca	....	....	....	39	12	8	38	18	19	....	1	1	....	....	15
Shelby	....	....	....	28	43	5	28	7	13	....	....	....	3	....	44
Stark	5	....	....	42	10	23	17	18	2	....	....	....	....	....	40
Summit	....	....	....	33	29	22	18	25	1	....	....	2	....	....	32
Trumbull	3	....	....	35	15	17	12	28	1	....	....	....	....	1	41
Tuscarawas	....	....	....	27	28	16	21	30	7	....	....	....	....	....	26
Union	....	1	2	44	1	3	38	16	22	....	....	....	....	....	21
Van Wert	....	....	3	50	11	12	23	25	17	....	1	....	....	....	22
Vinton	....	....	....	58	16	1	36	21	1	....	....	....	....	....	41
Warren	2	1	3	21	14	....	48	9	20	....	....	....	....	....	23
Washington	....	....	....	40	22	3	35	32	....	....	....	....	....	1	29
Wayne	5	....	....	28	26	17	25	14	11	....	....	....	....	....	33
Williams	....	....	....	49	9	5	33	14	15	....	....	3	....	....	30
Wood	1	....	1	35	18	8	39	10	12	....	2	2	....	1	26
Wyandot	....	....	1	47	11	11	24	14	12	....	2	....	....	....	37
Average per cent	.59	.25	.69	36.58	20.86	9.31	30.22	16.16	10.31	.12	.27	.83	.19	.23	32.36

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE DISTRIBUTION OF LIVE STOCK, MARCH 1, 1907.

COUNTIES.	Per cent. of the Different Breeds of Sheep.											
	Merinos	Grade Merinos	Delaine Merinos	Grade Delaine Merinos	French Merinos	Grade French Merinos	Cotswolds	Grade Cotswolds	Oxford Downs	Grade Oxford Downs	Shropshire Downs	Grade Shropshire Downs
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Adams	7	10	3	7	1	1	7	2	....	....	3	11
Allen	2	8	8	10	....	....	1	3	....	2	11	10
Ashland	8	8	6	17	....	1	....	....	1	2	4	22
Ashtabula	3	10	1	1	1	1	9	6	....	....	11	21
Athens	2	10	4	47	2	8	....	....	....	....	....	4
Auglaize	4	13	....	3	....	....	1	1	1	3	21	33
Belmont	16	15	9	39	....	....	....	....	....	....	....	2
Brown	4	1	3	2	2	....	4	....	8	....	5	10
Butler	1	2	....	....	....	....	14	....	2	2	1	4
Carroll	5	33	7	34	....	....	....	....	....	5	3	3
Champaign	7	5	1	2	2	4	6	3	....	....	4	4
Clark	6	5	2	11	....	....	....	....	....	....	5	20
Clermont	....	6	....	....	....	....	2	18	4	4	5	....
Clinton	7	12	14	15	1	7	7	2	....	....	3	3
Columbiana	1	9	3	14	....	....	1	5	1	1	3	9
Coshocton	10	26	5	19	2	1	....	....	....	....	5	8
Crawford	5	10	5	10	....	....	....	1	....	3	9	19
Cuyahoga	....	11	....	....	....	....	2	2	2	....	6	34
Darke	3	2	1	....	....	....	3	2	3	3	19	17
Defiance	1	4	2	4	....	....	....	....	4	8	12	43
Delaware	10	26	9	17	....	....	....	....	....	1	7	8
Erie	2	25	2	8	....	....	4	5	5	....	3	8
Fairfield	7	14	6	5	....	....	1	....	3	2	8	4
Fayette	1	22	1	2	....	4	2	1	3	....	22	3
Franklin	8	9	4	4	....	2	....	1	....	....	10	26
Fulton	5	10	8	20	....	....	....	....	1	2	10	28
Gallia	9	18	12	7	....	....	....	5	1	....	5	11
Geauga	2	6	....	10	....	....	2	6	1	1	9	52
Greene	4	12	7	12	1	....	5	5	....	1	7	12
Guernsey	17	21	16	24	....	....	....	....	1	....	2	2
Hamilton	7	2	....	....	....	....	7	5	3	1	11	17
Hancock	3	25	3	5	....	4	1	....	....	1	8	22
Hardin	6	8	8	4	5	12	3	2	1	2	19	4
Harrison	15	19	22	29	....	1	2	2	....	....	1	1
Henry	....	5	....	....	....	....	1	1	....	7	31	15
Highland	2	2	3	4	1	....	3	1	1	1	5	14
Hocking	9	2	6	5	2	....	4	....	....	....	5	1
Holmes	1	6	9	24	....	....	....	....	....	....	7	16

Huron	6	7	14	25	...	...	2	...	1	1	3	12
Jackson	2	3	1	7	...	...	2	3	2	...	10	15
Jefferson	23	18	4	10	1	...	1	...	...	...	3	3
Knox	6	10	21	24	...	...	1	...	...	...	6	3
Lake	1	17	...	...	...	...	2	4	...	...	4	36
Lawrence	8	...	...	...	...	...	25	...	...	...	10	8
Licking	14	17	4	11	...	...	1	2	...	...	6	9
Logan	10	10	10	8	1	4	1	...	...	1	9	17
Lorain	3	9	2	6	1	...	2	9	...	2	5	25
Lucas	1	...	...	...	...	...	...	...	...	...	22	12
Madison	7	17	2	5	...	...	1	...	...	...	19	11
Mahoning	...	10	8	9	...	...	...	...	...	...	1	34
Marion	10	12	8	9	...	...	5	8	...	1	9	14
Medina	4	10	8	14	...	...	1	1	2	6	17	22
Meigs	5	35	4	14	1	3	...	...	...	...	2	10
Mercer	...	...	...	...	...	...	...	3	...	...	24	25
Miami	15	3	...	...	2	...	7	...	1	...	6	19
Monroe	13	23	6	8	1	1	1	...	...	...	1	...
Montgomery	...	5	...	...	...	...	...	3	1	8	25	13
Morgan	18	28	11	21	3	...	...	...	...	...	1	1
Morrow	9	23	10	22	1	1	2	...	1	2	4	8
Muskingum	8	40	4	19	...	1	1	...	...	...	1	1
Noble	9	28	18	35	1	1	...	...	...	...	...	...
Ottawa	2	31	...	1	...	...	5	2	...	...	...	20
Paulding	3	3	...	...	4	...	7	...	7	3	7	14
Perry	14	23	9	8	...	4	1	1	1	1	4	7
Pickaway	11	7	...	14	...	...	...	2	...	...	10	12
Pike	6	5	1	1	...	...	5	...	...	...	14	20
Portage	3	9	10	10	...	1	4	3	2	1	10	9
Preble	...	1	...	...	...	...	1	4	6	7	16	6
Putnam	3	4	2	3	...	1	2	3	3	2	11	17
Richland	3	9	12	29	...	...	...	...	...	...	9	19
Ross	6	3	1	2	...	...	1	...	...	...	15	15
Sandusky	14	...	1	3	2	3	...	...	...	...	18	13
Scioto	1	2	2	1	1	...	4	8	1	3	1	4
Seneca	8	8	7	12	...	...	6	1	1	4	16	26
Shelby	8	7	2	8	...	...	4	1	...	...	5	22
Stark	3	5	2	7	...	...	3	1	6	8	4	7
Summit	...	11	...	...	10	5	2	3	...	...	5	17
Trumbull	12	5	1	2	...	...	5	4	...	...	3	14
Tuscarawas	16	21	14	8	...	...	...	...	1	1	14	3
Union	3	11	9	2	4	5	...	...	4	2	16	3
Van Wert	2	3	...	1	...	...	1	2	6	2	11	38
Vinton	21	29	6	9	...	...	...	...	...	...	1	2
Warren	14	8	...	...	...	...	1	1	8	3	5	11
Washington	22	23	3	11	...	2	...	...	...	...	5	...
Wayne	6	11	4	5	1	1	3	1	1	1	14	16
Williams	1	3	6	9	...	...	1	2	6	14	15	31
Wood	3	4	...	1	...	...	6	2	...	...	28	11
Wyandot	9	13	6	13	...	1	1	2	...	...	9	14
Average per cent	6.43	11.54	4.81	9.34	.61	.91	2.38	1.76	1.22	1.42	8.62	13.52

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE DISTRIBUTION OF LIVE STOCK, MARCH 1, 1907.

Concluded.

COUNTIES.	Per cent. of the Different Breeds of Sheep.												
	Hampshire Downs	Grade Hampshire Downs	South Downs	Grade South Downs	Lincolns	Grade Lincolns	Leicesters	Grade Leicesters	Dorset Horned	Grade Dorset Horned	Other pure breeds	Grades of other pure breeds	Mixed Bloods
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Adams	...	...	6	11	...	1	...	...	...	...	...	3	27
Allen	6	1	...	...	...	...	...	...	...	...	...	...	38
Ashland	...	...	...	1	...	...	...	...	...	...	...	2	28
Ashtabula	1	...	2	1	1	...	...	...	1	3	...	...	27
Athens	...	...	...	4	...	...	...	...	...	...	...	1	18
Auglaize	...	...	...	2	...	...	...	...	...	...	...	1	17
Belmont	...	...	...	1	...	...	...	...	...	...	...	5	13
Brown	...	...	20	...	...	...	...	...	...	...	1	...	40
Butler	3	...	18	16	...	...	...	...	1	...	...	...	36
Carroll	...	...	1	2	...	...	...	...	...	...	...	...	7
Champaign	...	...	2	...	2	...	...	4	1	1	2	10	40
Clark	...	1	8	5	...	...	2	5	...	...	...	...	30
Clermont	...	...	15	25	...	...	...	...	...	...	...	6	15
Clinton	...	...	...	...	...	...	...	...	2	2	...	...	25
Columbiana	...	...	1	4	...	...	...	...	...	...	1	2	45
Coshocton	...	...	2	2	...	...	...	...	...	...	...	1	19
Crawford	...	...	...	...	...	...	...	...	...	...	5	1	32
Cuyahoga	...	...	2	17	3	...	...	...	3	...	...	...	18
Darke	...	1	8	9	...	1	...	...	...	...	...	2	26
Defiance	...	...	1	1	...	...	...	...	...	...	1	1	18
Delaware	1	...	...	...	...	...	...	...	...	...	1	...	20
Erie	...	...	...	...	...	...	...	...	...	...	...	1	37
Fairfield	...	...	7	7	...	...	...	...	...	...	...	3	33
Fayette	4	...	2	3	...	2	...	...	...	2	...	...	26
Franklin	3	2	1	2	...	...	...	...	...	...	...	...	28
Fulton	...	...	...	...	1	2	1	2	...	...	...	...	10
Gallia	...	...	6	1	1	...	...	...	...	...	3	...	21
Geauga	...	...	...	...	...	...	...	...	2	...	...	...	9
Greene	...	...	2	1	...	...	...	...	1	...	...	3	27
Guernsey	...	...	1	...	...	...	...	...	...	...	...	...	16
Hamilton	...	...	12	6	...	...	...	...	2	...	3	...	24
Hancock	...	...	1	3	1	1	...	...	...	...	1	1	20
Hardin	...	1	...	1	...	...	...	...	...	...	...	...	24
Harrison	...	...	...	...	...	...	...	...	...	...	...	...	8
Henry	...	...	...	4	...	...	...	...	...	...	...	24	12
Highland	1	3	9	8	1	...	...	...	...	...	...	...	41
Hocking	...	...	3	...	...	...	...	...	...	...	...	2	61

Holmes	2	16		3									16
Huron			3	3					1	1	1		20
Jackson			12	10	1							2	30
Jefferson			1	2			1		1				32
Knox			4		1						1	3	20
Lake				8	16						2	4	6
Lawrence												18	31
Licking		2	4	3			1	1				3	22
Logan			3	4		1							21
Lorain			2	3				2	3	2			24
Lucas			9	4									52
Madison	2		2	4					1			3	26
Mahoning												4	34
Marion						1						1	22
Medina				1						1		1	12
Meigs			1	6									19
Mercer		1	6	7								10	24
Miami			13	5	3								26
Monroe				7			1	1			1	1	35
Montgomery	1	2	4	12								2	24
Morgan		2									2	1	12
Morrow		1		1		1		1					13
Muskingum			3	4								2	16
Noble			1	2			2	1					2
Ottawa												9	30
Paulding			7	7		1							37
Perry			1	1	1						2		22
Pickaway			3									10	31
Pike			5	11								5	27
Portage				3							1		34
Preble	4	1	8	5				2				3	36
Putnam	3	1	3	7								21	14
Richland												3	16
Ross	1		4		1					3			48
Sandusky			3	10	3								30
Scioto			3	21									48
Seneca			3		1				1				6
Shelby			13		1			4	1				24
Stark			5	1									48
Summit			5	3								3	36
Trumbull												4	50
Tuscarawas			2	2									18
Union			1								3	12	25
Van Wert			1	5		1				1			26
Vinton											4		28
Warren	2		13	10	1				1		1	1	20
Washington				3									31
Wayne			4	3		1					1	2	25
Williams					1	1				1			9
Wood			7	7	8		8	2					13
Wyandot			5										27
Average per cent	.39	.40	3.34	3.69	.54	.16	.18	.28	.25	.19	.42	2.24	25.36

OFFICIAL REPORT

OF THE

Ohio Department of Agriculture

ON THE

Acreage and Condition of Crops and Losses to Live Stock.

May 1, 1907.

The following report of the estimated area and condition of crops, and the losses of live stock during winter and spring, is based upon returns received from the regular township crop correspondents of the department, the returns being averaged for each county and finally for the state.

Wheat—Prospect compared with an average	74 per cent.
Spring Barley—Area sown compared with last year	85 per cent.
Winter Barley—Prospect compared with an average	69 per cent.
Barley—Total Area.	
Sown last fall	25 per cent.
Sown this spring	75 per cent.
Rye—Prospect compared with an average	86 per cent.
Oats—Area for 1906 as returned by township assessors	1,365,434 acres
Oats—Area sown this year compared with 1906	99 per cent.
Oats—Estimated area for the harvest of 1907	1,359,009 acres
Wheat—Damage by Hessian fly	1.8 per cent.
Wheat—Damage by other insects	1 per cent.
Clover—Average date of seeding	March 25
Clover—Acreage sown compared with last year	90 per cent.
Horses—Losses during winter and spring	1.9 per cent.
Cattle—Losses during winter and spring	1.7 per cent.
Sheep—Losses during winter and spring	3 per cent.
Hogs—Losses during winter and spring	2.3 per cent.
Berries—Prospect compared with an average	71 per cent.

Wheat prospects are now estimated at 74 per cent. compared with an average, a decline of 13 per cent. since the report issued by this department, April 1st. The past month, with its freezing weather and cold rains, has been most severe on the wheat plant, hence the decline in prospect. But four counties in the state now report wheat prospect at an average or better. Correspondents, generally, note its unpromising condition, and in many sections of the state a large percentage of the original area seeded will be, or has been, plowed up and put to other crops. The damage reported by Hessian fly and other insects is of little consequence. As the original area seeded to wheat was below a good average, and deducting from this the area that will be plowed up, Ohio's wheat harvestthis year will necessarily be far below a full average crop.

The unfavorable weather has seriously retarded farm work and spring crops will go in late.

The township assessors' reports show that last year the oats area was 1,365,434 acres. The correspondents estimate that the area seeded to oats this year, compared with last, is 99 per cent., or 1,359,009 acres. These figures are probably low, as no doubt many correspondents have based their estimates on the amount now sown, without considering the many fields intended for oats, but owing to the unfavorable weather conditions it has been impossible to seed. A greater part of the plowed up wheat area will be sown to oats, although if the season continues backward it will be planted to corn.

Clover has been damaged to some extent by the freezing weather.

Live stock generally is in good condition, and the losses during the winter have been very slight. Pastures are very backward and many farmers are still feeding stock.

The prospect for berries is estimated at 71 per cent. compared with an average.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS AND LOSSES TO LIVE STOCK, MAY 1, 1907.

Counties.	Wheat	Spring Barley	Winter Barley	Barley Total Area		Rye	Oats			Wheat		Clover		Horses	Cattle	Sheep	Hogs	Berries
	Prospect compared with an average.	Area sown compared with last year.	Prospect compared with an average.	Sown last fall.	Sown this spring.	Prospect compared with an average.	Area for 1906 as returned by township assessors.	Area sown this year compared with 1906.	Estimated area for harvest of 1907.	Damage by Hessian fly.	Damage by other insects.	Average date of seeding days after Mar. 1.	Acreage sown compared with last year.	Losses during winter and spring.	Losses during winter and spring.	Losses during winter and spring.	Losses during winter and spring.	Prospect compared with an average.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Acres.	Per cent.	Acres.	Per cent.	Per cent.	Days.	Per cent.	Per cent.	Per cent.	Per cent.	Per ct.	Per ct.
Adams	86	70	60	60	40	83	3,890	90	3.501	6	5	10	81	1	1	7	2	55
Allen	46	80	....	....	100	66	14.850	127	18.860	....	....	27	84	3	1	2	1	72
Ashland	80	60	74	71	29	83	20,402	96	19,586	1	....	15	100	2	4	8	3	68
Ashtabula	75	100	....	....	100	83	22,682	98	22,228	1	1	27	84	1	1	2	1	72
Athens	103	....	....	....	....	95	4,477	83	3.706	....	....	22	95	1	2	2	1	87
Auglaize	18	100	....	....	100	70	21,253	129	27,516	....	....	23	75	3	1	4	3	66
Belmont	88	....	....	83	17	90	9,638	93	8,963	3	....	22	99	3	2	4	2	79
Brown	100	....	....	....	....	90	7,429	101	7,503	2	2	14	78	2	2	4	2	66
Butler	88	....	93	100	....	95	9,849	107	10,538	7	2	17	92	....	1	1	5	47
Carroll	84	....	....	....	....	84	12,688	94	11,927	2	2	17	97	1	1	6	3	76
Champaign	68	....	....	....	....	84	24,908	79	19.677	2	....	33	95	2	4	5	3	46
Clark	85	75	....	....	100	92	13,279	100	13,279	3	....	21	83	1	....	2	1	70
Clermont	80	....	....	....	....	80	10.167	92	9.354	6	2	10	83	1	1	....	1	77
Clinton	98	....	....	....	....	98	7,679	96	7.372	....	....	17	95	1	1	3	2	73
Columbiana	90	....	....	....	....	92	19.531	99	19.336	1	....	28	94	1	1	1	....	75
Coshocton	82	....	....	....	....	88	10,526	87	9,158	2	....	24	91	1	1	4	....	83
Crawford	74	88	40	18	82	90	23,825	81	19,298	3	1	34	92	3	1	4	3	70
Cuyahoga	72	....	....	....	....	80	12,318	100	12.318	1	1	34	93	1	2	1	1	73
Darke	29	....	70	....	....	71	35.972	112	40.289	2	3	25	94	2	1	2	4	63
Defiance	67	70	....	....	100	77	28,282	102	28.848	2	1	32	95	2	2	5	4	75
Delaware	76	....	....	....	....	84	16,508	95	15,683	2	1	28	88	2	3	5	5	64
Erie	66	64	50	18	82	82	13,775	100	13.775	3	....	23	92	2	2	4	4	83
Fairfield	93	....	....	....	....	94	4.257	84	3,556	1	1	23	93	3	2	4	6	89
Fayette	91	....	....	....	....	97	8,803	88	7,747	4	1	15	96	1	1	2	3	64
Franklin	90	....	....	....	....	91	17,462	99	17,287	3	2	32	86	2	2	5	4	82
Fulton	55	100	....	....	100	83	25,688	98	25,174	....	....	43	95	3	3	1	3	80
Gallia	88	....	....	....	....	88	3.602	83	2,990	....	....	10	74	1	1	3	1	37
Geauga	82	....	....	....	....	75	13,515	80	10.812	5	....	43	100	3	3	1	2	95
Greene	89	25	90	60	40	97	9,367	89	8,340	2	....	18	86	3	3	3	2	78
Guernsey	90	....	....	....	....	94	7.288	90	6,559	....	....	18	91	1	1	4	1	88
Hamilton	92	....	85	80	20	94	3,196	80	2,557	1	3	13	85	5	5	3	6	60
Hancock	70	95	78	20	80	80	17,739	99	17,562	2	1	29	90	1	1	3	2	82
Hardin	43	....	....	....	....	58	13.829	102	14,106	8	8	23	98	5	4	5	3	84
Harrison	89	125	....	....	100	97	7,704	96	7,396	1	1	28	109	2	1	4	1	76
Henry	61	100	....	....	100	83	29,207	108	31,544	1	2	32	89	1	1	1	2	84
Highland	88	85	....	....	....	86	5,475	91	4,982	4	6	7	82	3	4	5	4	51

Hocking	80	....	....	....	....	85	2,278	95	2,183	5	....	20	95	4	5	5	6	35
Holmes	86	95	....	....	100	90	18,493	95	17,568	1	1	27	100	2	3	2	1	81
Huron	65	90	40	20	80	89	28,969	93	26,941	2	1	28	91	2	1	5	4	71
Jackson	85	....	....	....	....	97	1,987	86	1,709	....	....	14	87	1	1	3	1	57
Jefferson	92	....	....	....	....	82	10,510	95	9,985	....	1	24	82	1	1	3	2	76
Knox	82	....	....	....	....	86	11,158	88	9,819	2	3	26	99	5	4	6	5	75
Lake	66	100	....	....	100	78	6.589	97	6,391	2	2	24	85	1	1	1	1	87
Lawrence	96	....	....	92	8	98	4,527	74	3,350	2	3	26	67	3	4	1	....	50
Licking	92	....	....	....	....	92	13,114	92	12,065	3	....	21	88	2	1	4	2	83
Logan	40	60	82	60	40	72	20,536	113	23,206	....	....	33	92	1	....	2	2	65
Lorain	70	....	....	....	....	77	21,350	72	15,372	....	....	37	88	1	1	4	2	75
Lucas	55	94	....	....	100	85	17,791	101	17,969	1	....	34	91	2	2	1	....	68
Madison	84	....	....	....	....	94	31,456	95	29,883	1	1	32	77	1	1	2	2	85
Mahoning	83	....	....	....	....	90	16,432	93	15,282	....	....	35	99	2	2	1	4	79
Marion	67	100	....	....	....	83	23,103	97	22,410	....	2	30	81	1	1	3	2	67
Medina	88	100	....	....	100	89	20,933	98	20.514	1	1	32	98	1	1	3	1	64
Meigs	90	100	....	....	100	93	3,837	85	3,261	3	....	27	80	4	3	5	2	50
Mercer	20	73	....	2	98	98	30,950	135	41,783	2	....	26	81	1	1	2	3	79
Miami	35	....	....	....	....	85	23,682	132	31,260	2	1	17	88	3	3	5	1	50
Monroe	86	....	....	....	....	87	8,545	81	6,921	5	2	11	60	1	3	2	3	70
Montgomery	78	80	50	46	54	63	13.920	98	13,642	1	2	24	102	1	1	2	3	58
Morgan	88	....	....	....	....	92	2,899	83	2,406	1	1	21	78	2	2	5	2	73
Morrow	73	....	....	....	....	73	15,777	78	12,306	1	2	28	94	2	1	2	1	86
Muskingum	86	....	....	....	....	91	7,874	94	7,402	1	1	22	92	2	1	3	1	77
Noble	81	....	....	....	....	90	4,359	79	3,444	3	1	16	92	1	2	4	1	68
Ottawa	52	77	100	2	98	91	12,977	111	14,404	....	....	34	100	....	....	1	1	100
Paulding	38	48	....	17	83	79	26,776	107	28,650	....	....	38	80	2	1	2	1	41
Perry	90	....	....	....	....	85	2,541	89	2,261	2	2	17	89	1	1	4	1	83
Pickaway	93	....	....	....	....	94	5.680	95	5,396	1	....	16	93	2	1	2	2	73
Pike	75	....	....	....	....	80	4,724	68	3,212	2	....	31	73	2	1	2	1	57
Portage	82	....	....	....	....	95	19,773	96	18,882	1	....	30	92	2	1	1	1	74
Preble	58	100	50	50	50	85	10,580	103	10,897	4	3	18	98	2	1	2	3	85
Putnam	40	83	50	2	98	75	19,097	106	20,243	1	1	29	93	2	2	2	4	62
Richland	71	90	85	22	78	78	25.438	98	24,929	2	1	32	95	1	1	3	2	81
Ross	97	....	....	....	....	81	2,906	89	2,586	1	....	13	88	1	2	2	3	46
Sandusky	53	105	....	....	100	82	21,948	93	20,411	5	2	33	90	1	1	2	3	67
Scioto	103	....	....	....	....	100	5,198	98	5,094	....	....	21	84	1	1	1	2	72
Seneca	69	....	....	....	....	87	26,200	98	25,676	2	2	28	90	2	1	2	1	69
Shelby	18	100	....	....	....	87	29,237	125	36,546	....	....	20	100	2	1	3	1	92
Stark	80	80	60	10	90	86	30,792	102	31,408	2	....	26	105	2	2	3	2	58
Summit	72	....	....	....	....	78	19,358	90	17,422	3	....	31	93	1	1	1	2	73
Trumbull	83	....	....	....	....	83	20.590	88	18.119	....	....	26	92	4	5	4	3	79
Tuscarawas	75	....	....	....	....	80	17,604	93	16,372	3	1	27	86	4	4	5	5	69
Union	80	....	....	....	....	95	22,892	98	22,434	3	....	27	92	1	1	3	2	85
Van Wert	31	74	....	2	98	78	22,578	115	25,965	2	....	32	87	2	1	2	3	49
Vinton	86	....	75	100	....	82	1,909	93	1,775	....	....	18	85	1	1	3	1	58
Warren	87	....	....	....	....	95	10.893	93	10,130	....	2	27	100	2	2	3	2	53
Washington	102	....	....	....	....	99	9,092	85	7,728	1	1	14	83	....	1	1	1	90
Wayne	75	100	....	....	....	80	31,086	96	29.843	2	2	27	96	2	2	4	3	88
Williams	75	94	....	....	100	90	28,597	96	27,453	1	....	32	99	2	1	4	1	84
Wood	48	72	60	30	70	77	47.294	107	50,605	2	2	39	93	3	3	3	2	57
Wyandot	77	98	80	90	10	91	17,545	95	16,668	1	1	14	89	2	1	4	4	61
Average Per cent.	74	85	69	25	75	86	....	99	....	1.8	1.0	Mar.	90	1.9	1.7	3.0	2.3	71
Totals	....	....	....	....	....	....	1,365,434	....	1,359,009	....	....	25	....	....	....	....	....	......

OFFICIAL REPORT

OF THE

Ohio Department of Agriculture

ON THE

Area and Prospect of Wheat, Corn and Potatoes, and the Prospect of Other Crops.

JULY 1, 1907.

The following report presents the area of wheat, corn and potatoes as compared with the areas of last year. Prospect is by comparison with a full average. The estimates have been carefully worked out from the returns received from the regular township crop correspondents of the department:

Wheat—Estimated area for the harvest	1,869,947 acres.
Wheat—Prospect compared with an average	79 per cent.
Barley—Prospect compared with an average	85 per cent.
Rye—Prospect compared with an average	87 per cent.
Oats—Prospect compared with an average	76 per cent.
Corn—Area in 1906	2,892,809 acres.
Corn—Area this year compared with 1906	95 per cent.
Corn—Total estimated area for 1907	2,758,894 acres.
Corn—Prospect compared with an average	72 per cent.
Corn—Damage by cut worm	3.8 per cent.
Corn—Damage by white grub	2.1 per cent.
Clover—Damage by white grub	2.3 per cent.
Potatoes—Area in 1906	116,916 acres.
Potatoes—Area planted this year compared with 1906	95 per cent.
Potatoes—Estimated area for 1907	110.670 acres.
Potatoes—Prospect compared with an average	85 per cent.
Tobacco—Acreage compared with last year	91 per cent.
Timothy—Prospect compared with an average	79 per cent.
Pastures—Condition compared with an average	94 per cent.
Horses—Condition compared with an average	97 per cent.
Colts—Number compared with an average	95 per cent.
Cattle—Condition compared with an average	97 per cent.
Calves—Number compared with an average	94 per cent.
Wool—Clip compared with last year	96 per cent.

As indicated in the report issued by this department one month ago, the wheat prospect over the state is very irregular, and while in many counties the harvest will be almost an average one, in some sections of the state, particularly the northwest counties, the crop will be far below a fair average. Wheat wintered well, its condition on April 1st being estimated at 87 per cent., but during that month it was severely damaged by cold, freezing rains, and the May report showed a decline of 13 per cent. in its condition. During the month of May it improved slightly.

while now at harvest time the prospect is estimated at 79 per cent. compared with an average for the state as a whole. An unusually large percentage of the original area seeded to wheat was plowed up this spring, the report showing 6.7 per cent., or 166,182 acres. As the original area seeded last fall was 2,036,129 acres, this leaves 1,869,947 acres for the harvest. Many correspondents report damage by rust, while others note the ravages of insect pests; these reports, however, are not general over the state, or even in immediate localities. The season has been very backward, hence the harvest will be late.

Oats show a decline of 5 per cent. in prospect during the past month and the outlook is unpromising. The crop was seeded late, made a poor start and the report of damage by rust and insect pests is very general. The present prospect is estimated at 76 per cent. compared with an average.

The area planted to corn for this year's harvest shows 133,915 acres less than the area reported by the township assessors last year, due principally to the fact that it was impossible to plant much ground intended for corn, owing to wet weather. The crop is not advanced as far as usual at this season, and there is lack of uniformity in growth, due to irregularity in time of planting. The fields are weedy, as proper cultivation has been impossible. Its present condition is estimated at 72 per cent. compared with an average.

The estimated area planted to potatoes is reported at 110,670 acres, being 95 per cent. compared with the acreage of last year. The prospect for a good crop is encouraging, being estimated at 85 per cent.

Timothy hay is generally a light crop. Pastures are now in fine condition.

REPORT ON THE AREA AND PROSPECT OF WHEAT, CORN, POTATOES AND OTHER CROPS, JULY 1, 1907.

Counties.	Wheat.				Barley.	Rye.	Oats.	Corn.						Clover.
	Prospect compared with an average.	Area sown last fall.	Plowed up this spring.	Estimated area for the harvest.	Prospect compared with an average.	Prospect compared with an average.	Prospect compared with an average.	Area in 1906.	Area this year compared with 1906.	Total estimated area for 1907.	Condition compared with an average.	Damage by cut-worm.	Damage by white grub.	Damage by white grub.
	Per cent	Acres	Per cent	Acres	Per cent	Per cent	Per cent	Acres	Per cent	Acres	Per ct	Per ct	Per ct	Per ct
Adams	81	18,475	2	18,106	....	88	58	34,318	88	30,200	79	3	10	2
Allen	46	24,312	48	12,642	57	84	97	35,195	101	35,547	87	4	1	....
Ashland	81	27,804	....	27,804	75	77	86	24,668	88	21,708	73	4	5	1
Ashtabula	86	6,188	3	6,002	....	94	80	12,606	90	11,345	55	7	2	5
Athens	90	7,210	....	7,210	....	100	64	15,238	100	15,238	78	....	....	....
Auglaize	21	34,697	63	12,838	....	64	82	44,508	94	41,838	75	8	1	2
Belmont	81	16,213	1	16,051	....	89	66	18,183	94	17,092	66	5	2	1
Brown	83	19,308	....	19,308	....	92	53	38,811	92	35,706	80	2	3	7
Butler	90	52,948	....	52,948	85	93	67	53,691	96	51,543	82	5	2	....
Carroll	82	12,832	1	12,704	85	87	76	12,015	92	11,054	63	3	2	7
Champaign	64	25,429	13	22,123	90	95	69	58,831	97	57,066	77	3	2	....
Clark	87	27,734	8	25,515	75	90	73	49,181	100	49,181	79	2	....	....
Clermont	97	12,556	3	12,179	....	95	57	30,185	92	27,770	87	3	....	2
Clinton	93	41,702	....	41,702	....	98	65	61,097	99	60,484	79	2	2	....
Columbiana	89	20,946	....	20,946	....	85	84	16,566	94	15,572	83	3	3	2
Coshocton	93	20,899	2	20,481	90	88	81	21,281	89	18,940	63	2	2	3
Crawford	82	26,906	....	26,906	....	80	82	34,055	89	30,309	54	3	....	....
Cuyahoga	76	6,553	1	6,487	90	84	85	7,286	95	6,922	67	1	....	....
Darke	51	51,982	26	38,467	80	81	78	89,637	97	86,948	78	2	2	1
Defiance	78	19,007	10	17,106	80	91	90	30,559	89	27,198	57	3	3	2
Delaware	84	14,221	2	13,937	90	89	61	34,169	89	30,410	69	1	....	1
Erie	72	15,666	7	14,569	75	88	88	15,114	96	14,509	65	7	4	5
Fairfield	82	41,124	2	40,302	....	83	58	47,235	93	43,929	67	6	1	4
Fayette	93	31,308	....	31,308	....	94	66	58,567	102	59,738	79	6	4	5
Franklin	90	27,553	1	27,277	....	85	68	55,091	94	51,786	75	10	1	5
Fulton	90	16,134	5	15,327	100	....	90	35,349	105	37,116	90	4	1	2
Gallia	81	12,472	3	12,098	....	83	62	18,686	91	17,004	63	4	8	3
Geauga	86	5,797	....	5,797	85	93	88	7,901	101	7,980	65	....	....	5
Greene	92	42,373	....	42,373	....	93	53	56,212	99	55,650	80	4	3	....
Guernsey	90	13,566	4	13,023	....	91	82	14,732	94	13,848	70	5	2	2
Hamilton	92	12,891	1	12,762	....	95	68	14,556	99	14,410	84	1	....	....
Hancock	76	40,049	8	36,845	80	82	92	52,197	98	51,153	77	7	1	....
Hardin	59	17,740	13	15,434	100	80	93	36,857	96	35,383	66	1	....	....
Harrison	85	9,302	....	9,302	....	88	82	10,305	89	9,171	73	3	3	3

Henry	73	26,316	2	25,790	80	88	86	59.131	89	52,627	71	5	1	8
Highland	86	38,814	....	38,814	97	83	70	52,010	98	50,970	80	4	10	6
Hocking	88	11,010	1	10,900	....	80	90	13.264	98	12,999	80	10	3	8
Holmes	92	23.663	....	23,663	90	94	89	21,540	96	20,678	79	5	2	3
Huron	79	31,889	1	31,570	....	97	89	31,186	89	27,756	57	4	6	10
Jackson	79	7,115	....	7,115	....	77	68	10,813	91	9,840	72	9	6	....
Jefferson	79	11,092	....	11.092	100	87	74	10,521	92	9,679	72	4	....	....
Knox	75	25,803	1	25,545	....	86	66	30,781	93	28,626	75	5	4	....
Lake	79	3,114	1	3,083	....	89	81	5,890	105	6,185	84	4	....	3
Lawrence	100	2,933	....	2,933	....	100	63	12,136	89	10.801	77	10	....	....
Licking	85	31,403	1	31,089	....	87	76	43,036	93	40,023	77	4	1	2
Logan	57	20,804	15	17,683	66	92	87	46,604	98	45,672	83	1	1	1
Lorain	76	19,895	....	19,895	....	85	75	18,307	89	16,293	63	2	1	3
Lucas	56	8,727	38	5,411	87	78	80	22,593	100	22,593	47	1	....	1
Madison	89	14,118	....	14,118	100	96	79	74,182	101	74,924	71	1	....	....
Mahoning	83	14.191	....	14,191	....	80	87	12,626	89	11,237	65	2	....	2
Marion	73	16,201	7	15,067	100	85	82	45,029	90	40,526	76	6	1	2
Medina	71	21,776	2	21,340	....	79	69	18,959	89	16.874	50	2	1	1
Meigs	82	12,513	2	12,263	....	75	60	12.291	88	10,816	72	2	....	3
Mercer	32	37,224	63	13,773	80	75	83	48,740	106	51,664	81	9	1	1
Miami	61	40,476	17	33,595	80	86	73	54,367	99	53,823	75	1	5	5
Monroe	92	16.277	1	16,114	....	90	81	15,613	95	14,832	73	5	4	4
Montgomery	90	37,023	....	37,023	85	100	79	43,718	100	43,718	87	....	....	....
Morgan	79	11,825	....	11,825	....	83	72	13,204	89	11,752	63	3	2	4
Morrow	82	16,396	2	16.068	90	87	75	24,571	94	23,097	69	4	2	3
Muskingum	82	22.655	....	22,655	....	93	69	29,873	89	26.587	70	3	2	2
Noble	87	12,664	1	12,537	....	83	73	14,867	89	13,232	68	6	4	5
Ottawa	83	17,534	2	17,183	67	93	85	20,685	98	20,271	68	4	....	....
Paulding	65	12,331	38	7,645	87	91	86	39.653	89	35,291	63	3	1	2
Perry	84	13,817	1	13,679	....	51	68	15,287	94	14,370	66	2	3	3
Pickaway	94	52.478	1	51,953	....	94	51	63,425	96	60,888	75	4	2	2
Pike	85	13,686	....	13,686	....	89	65	25.391	96	24,375	80	4	....	3
Portage	85	17,327	....	17,327	....	96	81	13,051	93	12,137	69	1	....	....
Preble	69	41,750	4	40,080	....	97	54	53,882	95	51.188	73	1	2	2
Putnam	49	40.304	34	26,601	81	86	85	58,509	99	57,924	72	3	1	3
Richland	76	33,174	3	32,179	74	65	82	30,444	89	27,095	58	4	6	4
Ross	84	36,918	....	36,918	....	89	54	55,879	95	53,085	69	3	3	....
Sandusky	55	31,777	13	27.646	....	82	82	36,839	97	35,734	72	8	3	7
Scioto	83	13,204	4	12,676	....	97	73	19,883	89	17,696	74	3	2	1
Seneca	74	53,176	5	50,517	80	84	81	50,540	90	45,486	65	7	2	2
Shelby	50	33,098	23	25,485	....	100	93	43,027	97	41,736	82	....	....	....
Stark	86	43,184	....	43,184	80	85	86	29,834	103	30,729	73	8	4	10
Summit	78	22,039	....	22,039	....	81	70	15,278	88	13,445	59	4	3	1
Trumbull	87	7,711	....	7,711	....	86	71	12,536	88	11,032	63	4	1	....
Tuscarawas	79	23.758	1	23,520	....	90	68	18,805	88	16,548	63	1	3	2
Union	93	14,574	5	13,845	....	99	81	50.269	96	48,258	77	2	....	....
Van Wert	43	28,828	48	14,991	82	78	81	53,382	100	53,382	61	8	....	....
Vinton	87	4,818	1	4,770	....	85	69	9,111	95	8,655	74	1	2	....
Warren	86	28,885	....	28,885	90	90	53	42,302	99	41,879	72	2	3	1
Washington	96	20,983	....	20,983	....	92	88	18,781	93	17,466	64	10	4	3
Wayne	84	48,784	....	48,784	100	88	84	37,969	89	33,792	69	1	5	....
Williams	83	18,599	1	18,413	84	95	95	31,518	91	28,681	78	5	1	....
Wood	55	27,353	25	20.515	90	90	88	77,060	101	77,831	79	3	5	10
Wyandot	87	26,225	2	25,701	95	92	86	38,735	99	38,348	86	6	1	2
Averages	79	....	6.7	....	85	87	76	....	95	....	72	3.8	2.1	2.3
Totals	....	2,036,129	....	1,869,947	....	....	....	2,892.809	....	2,758,894	....	....	....	....

REPORT ON THE AREA AND PROSPECT OF WHEAT, CORN, POTATOES AND OTHER CROPS, JULY 1, 1907—Concluded.

Counties.	Potatoes.				Tobacco	Timothy	Pastures.	Horses	Colts	Cattle	Calves	Wool
	Area in 1906.	Area planted this year compared with 1906.	Estimated area for 1907.	Condition compared with an average.	Acreage compared with last year.	Prospect compared with an average.	Condition compared with an average.	Condition compared with an average.	Number compared with an average.	Condition compared with an average.	Number compared with an average.	Clip compared with last year.
	Acres	Per cent	Acres	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
Adams	277	91	252	88	89	78	94	91	96	89	83	92
Allen	565	97	548	88	....	89	96	103	102	100	100	97
Ashland	1,141	98	1,118	86	....	83	89	94	80	90	85	95
Ashtabula	3,179	95	3,020	95	....	75	95	100	86	100	99	95
Athens	480	101	485	98	....	88	98	101	102	104	93	103
Auglaize	696	88	612	74	....	54	94	100	83	96	82	83
Belmont	949	97	921	82	86	72	105	99	96	99	94	100
Brown	327	100	327	92	100	78	88	90	92	93	97	97
Butler	1,293	98	1,267	88	120	77	99	100	98	100	90	100
Carroll	584	89	520	95	....	75	98	103	98	97	86	99
Champaign	314	91	286	85	90	88	88	100	83	98	90	98
Clark	826	101	834	88	....	92	100	99	100	100	100	102
Clermont	812	90	731	98	73	77	98	98	88	100	98	97
Clinton	197	98	193	90	80	81	95	95	94	98	100	91
Columbiana	1,964	94	1,846	91	....	86	98	96	100	98	99	98
Coshocton	1,067	94	1,003	91	....	86	98	99	97	87	95	99
Crawford	1,404	95	1,334	56	....	73	95	98	89	99	99	101
Cuyahoga	6,376	102	6,504	82	....	81	96	99	102	100	96	101
Darke	930	95	884	78	111	88	91	95	89	93	95	93
Defiance	738	88	649	68	75	83	97	92	87	93	97	93
Delaware	544	100	544	89	....	79	104	104	102	103	96	100
Erie	3,267	97	3,169	88	....	64	87	96	95	95	97	97
Fairfield	809	98	793	78	....	76	82	98	91	98	95	89
Fayette	17	93	16	89	....	73	93	93	93	98	90	97
Franklin	2,869	94	2,697	81	....	83	95	97	96	99	96	98
Fulton	924	100	924	100	....	70	80	100	100	90	100	105
Gallia	158	88	139	85	97	67	89	94	98	91	97	94
Geauga	2,963	96	2,844	60	90	73	94	99	98	95	100	93
Greene	796	94	748	87	88	82	83	93	106	95	95	100
Guernsey	464	98	455	85	75	93	103	101	100	102	98	98
Hamilton	3,520	98	3,450	89	80	96	104	100	112	102	100	108
Hancock	702	93	653	92	....	90	98	99	101	102	100	98
Hardin	1,429	91	1,300	72	....	89	99	97	103	96	96	104
Harrison	158	93	147	86	100	78	91	97	98	98	97	101

Henry	667	79	527	75	....	76	92	92	76	86	84	95
Highland	103	91	94	85	50	69	91	98	98	96	95	97
Hocking	642	93	597	85	....	70	90	98	100	100	90	96
Holmes	429	100	429	99	....	83	94	100	96	99	94	110
Huron	1.359	96	1,305	70	....	83	99	97	89	98	98	99
Jackson	165	94	155	84	....	67	90	94	94	93	89	75
Jefferson	719	96	690	93	....	72	92	96	99	95	95	89
Knox	442	97	429	84	....	71	95	99	93	96	96	98
Lake	1,817	96	1,744	80	....	70	95	95	100	93	100	95
Lawrence	339	100	339	105	....	63	100	100	88	100	75	100
Licking	1,162	99	1,150	85	....	83	94	98	95	96	89	94
Logan	420	100	420	94	....	84	101	99	99	103	95	98
Lorain	2,886	83	2,395	75	....	80	98	99	93	97	78	88
Lucas	3,397	100	3,397	98	....	66	93	95	104	95	95	102
Madison	217	95	206	85	....	95	99	99	95	100	98	101
Mahoning	2,488	96	2,388	73	....	84	98	99	98	98	94	95
Marion	1,213	89	1,080	79	100	84	93	95	91	94	89	92
Medina	3.447	86	2,964	72	100	71	92	90	91	92	95	95
Meigs	568	97	551	97	....	90	105	93	100	103	100	100
Mercer	738	98	723	92	100	79	84	97	99	96	95	95
Miami	739	96	709	81	95	80	93	94	97	93	96	90
Monroe	1,278	99	1.265	88	90	78	97	98	97	95	93	96
Montgomery	1,187	100	1,187	80	93	76	90	98	90	100	100	96
Morgan	493	87	429	83	....	67	92	98	99	93	93	90
Morrow	900	115	1,035	79	....	75	97	98	95	98	96	101
Muskingum	822	93	764	84	....	86	99	98	89	97	95	97
Noble	475	95	451	81	86	79	94	101	91	97	92	96
Ottawa	643	100	643	92	....	102	103	100	102	100	100	100
Paulding	157	92	144	74	125	82	96	101	96	101	99	98
Perry	628	89	559	93	....	75	99	100	105	99	97	86
Pickaway	215	96	206	90	....	86	80	97	103	97	96	92
Pike	605	98	593	93	100	81	85	100	100	94	96	91
Portage	7,483	92	6,884	85	....	83	93	93	93	99	89	97
Preble	300	98	294	87	76	84	82	99	101	95	101	98
Putnam	830	95	789	91	100	68	88	92	102	97	96	99
Richland	1,842	87	1,603	71	....	70	87	91	78	97	92	95
Ross	715	95	679	93	....	76	84	95	103	95	87	92
Sandusky	2,335	80	1,868	78	....	72	87	88	83	90	78	87
Scioto	1.023	91	931	86	95	84	97	93	76	94	85	84
Seneca	1,903	85	1,618	84	60	78	89	77	87	94	89	95
Shelby	585	93	544	80	100	82	90	90	92	95	85	85
Stark	3,918	107	4,192	80	....	83	100	102	97	102	94	98
Summit	4.505	84	3.784	64	....	71	88	92	80	91	90	81
Trumbull	3.568	86	3,068	77	....	73	91	99	94	98	90	100
Tuscarawas	1,776	99	1,758	93	....	75	92	96	95	96	90	96
Union	299	99	296	92	....	99	107	100	96	99	100	102
Van Wert	637	82	522	79	....	69	88	97	84	93	91	95
Vinton	178	100	178	98	....	81	105	98	101	98	95	98
Warren	947	83	786	86	105	77	93	98	102	98	99	99
Washington	1,679	100	1,679	92	75	73	100	100	98	99	95	100
Wayne	6,186	103	6,372	81	....	76	89	96	92	97	91	97
Williams	589	94	554	63	....	84	93	95	84	98	93	94
Wood	872	103	898	93	....	80	97	97	88	88	89	90
Wyandot	637	93	592	83	....	91	89	96	98	97	94	95
Averages	....	95	....	85	91	79	94	97	95	97	94	96
Totals	116,916	....	110,670	....	....	....	....	....	....	....	....	....

OFFICIAL REPORT

OF THE

Ohio Department of Agriculture

ON THE

Acreage and Production of Wheat, Oats, Barley and Rye and the Condition or Prospect of Other Crops

OCTOBER 1, 1907.

The following report presents the first estimate made this year of the production of crops named. The acreage given is that returned by the township assessors of the state, and the product in bushels is computed from actual threshing reported through the regular crop correspondents of the Department. The condition or prospect given for other crops named is obtained by percentage comparison with a full average condition or prospect.

WHEAT—Estimated area harvested	2,087,417 acres.
“ —Product per acre estimated from threshers' returns	15.4 bushels.
“ —Total estimated product for 1907	32,203,181 bushels.
“ —Quality compared with an average	88 per cent.
“ —Crop of 1906 still in producers' hands	9 per cent
OATS—Area as returned by township assessors	1,456,515 acres.
“ —Product per acre as estimated from threshers' returns	22.6 bushels.
“ —Total estimated product for 1907	32,918,284 bushels.
“ —Quality compared with an average	78 per cent.
BARLEY—Fall and Spring:	
“ —Area as returned by township assessors	19,747 acres.
“ —Product per acre estimated from threshers' returns	25.9 bushels.
“ —Total estimated product for 1907	510,828 bushels.
“ —Quality compared with an average	86 per cent.
RYE—Area as returned by township assessors	38,965 acres.
“ —Product per acre estimated from threshers' returns	17 bushels.
“ —Total estimated product for 1907	661,943 bushels.
“ —Quality compared with an average	92 per cent.
CORN—Prospect compared with an average	74 per cent.
“ —Cut up for fodder	77 per cent.
“ —Average date for cutting for fodder	September 25.
ALFALFA—Number of cuttings this year, average	2.7.
“ —Total tons produced per acre from all cuttings, average	3.1.
POTATOES—Total yield compared with an average	65 per cent.
TOBACCO—Condition compared with an average	81 per cent.
PASTURES—Condition compared with an average	95 per cent.
APPLES—Prospect compared with an average	23 per cent.

The township assessors' returns show that the area seeded to wheat for the harvest of 1907 was 2,087,417 acres. The average yield per acre is estimated at 15.4 bushels, and the total production for the state at 32,203,181 bushels. A comparison of the above estimates with the corresponding ones of last year shows that while the area seeded for 1907 was 34,543 acres in excess of 1906 the total production is 10,525,906 bushels less than in 1906, when the average product per acre reached the record breaking point of 20.9 bushels.

Wheat was reported to be in a very satisfactory condition at the beginning of spring, but the very unseasonable weather during April severely retarded its growth, the estimated prospect declining 13 per cent. during the month. Cold, wet weather continued for more than another month, so that on July 1st the estimated prospect was 79 per cent., having gained only five points since the May report. Through the entire season there existed great irregularities in the condition of this crop in different sections of the state, the northwest counties seeming to suffer most from unfavorable weather. The quality of the grain is quite satisfactory, being estimated at 88 per cent. of an average.

The seeding for wheat is progressing nicely, though it is being retarded somewhat because of the late corn harvest, and for the same reason the acreage will probably be less than last year. Early sown wheat is generally reported as starting satisfactorily. Of the crop of 1906 there still remains in the producers' hands nine per cent.

The total production of oats for the state, which is 32,918,284 bushels, is an even proportionately greater decline over last year's production than that of the wheat crop, as this estimate is 13,246,483 bushels less than the estimate for 1906, while the area sown in 1907 as estimated from assessors' returns was 1,456,515 acres as compared with 1,365,434 acres sown for harvest of 1906. The average estimated product per acre for this year is 22.6 bushels, and for last year it was 33.9 bushels.

Oats suffered from the same detrimental weather conditions that affected wheat and in addition there were very general reports from correspondents of great damage to the crop from blight or rust and insect pests, notably severe ravages by a small green insect. It will be noticed that the quality, reported at 78 per cent. of an average, is poor.

It is estimated from assessors' returns that 2,944,691 acres were planted to corn for 1907, but the prospect, which at present is estimated at 74 per cent. compared with an average, is not flattering, due to unseasonable weather during and immediately following the planting season.

The average number of times, for the state, that alfalfa fields were cut is estimated at 2.7, and the average number of tons per acre, from all cuttings, is estimated at 3.1.

Potato prospects are reported at 65 per cent. of an average; very wet weather and blight in many localities conduced to the low prospect.

Prospect for apples, reported at 23 per cent. of an average, is very discouraging.

The condition of pastures is very generally reported to be excellent, the condition compared with an average for the state being 95 per cent.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF WHEAT, OATS, BARLEY AND RYE AND THE CONDITION OF OTHER CROPS, OCTOBER 1, 1907.

Counties.	Wheat.					Oats.			
	Estimated area harvested.	Product per acre estimated from threshers' returns.	Total estimated product for 1907.	Quality compared with an average.	Crop of 1906 still in producers' hands.	Area as returned by township assessors.	Product per acre estimated from threshers' returns.	Total estimated product for 1907.	Quality compared with an average.
	Acres.	Bushels.	Bushels.	Per cent.	Per cent.	Acres.	Bushels.	Bushels.	Per cent.
Adams	16,770	11	184,470	87	....	3,184	33	105,072	69
Allen	20,543	10	205,430	69	5	20,414	24	489,936	96
Ashland	27,367	14	383,138	95	8	19,458	22	428,076	63
Ashtabula	6,643	16	106,288	89	18	22,488	24	539,712	80
Athens	7,274	12	87,288	94	5	1,634	17	27,778	80
Auglaize	27,884	11	306,724	63	14	33,259	25	831,475	64
Belmont	15,582	12	186,984	92	5	9,071	24	217,704	87
Brown	18,603	10	186,030	88	24	6,258	13	81,354	61
Butler	57,452	18	1,034,136	90	3	10,187	25	254,675	79
Carroll	12,972	13	168,636	81	18	11,988	23	275,724	66
Champaign	29,103	18	523,854	95	12	30,761	19	584,459	87
Clark	32,342	17	549,814	87	7	13,451	18	242,118	57
Clermont	15,112	10	151,120	80	....	9,864	15	147,960	85
Clinton	41,838	21	878,598	98	3	5,271	20	105,420	60
Columbiana	18,785	17	319,345	88	3	17,567	24	421,608	93
Coshocton	21,182	16	338,912	98	25	11,173	21	234,633	79
Crawford	28,243	19	536,617	92	7	24,328	22	535,216	79
Cuyahoga	6,619	16	105,904	96	5	11,330	27	305,910	98
Darke	57,644	12	691,728	78	13	44,316	22	974,952	76
Defiance	19,206	15	288,090	91	2	30,024	22	660,528	90
Delaware	16,754	15	251,310	94	10	13,344	19	253,536	71
Erie	15,538	18	279,684	100	....	13,330	20	266,600	100
Fairfield	42,728	16	683,648	94	19	3,012	20	60,240	69
Fayette	36,479	20	729,580	93	7	7,018	22	154,396	69
Franklin	32,570	16	521,120	93	5	14,005	21	294,105	71
Fulton	14,724	19	279,756	100	2	27,543	25	688,575	100
Gallia	12,059	12	144,708	90	8	2,384	16	38,144	70
Geauga	6,719	19	27,661	100	5	14,292	25	357,300	96
Greene	43,575	17	740,775	92	13	7,743	19	147,117	74
Guernsey	11,068	11	121,748	83	14	5,720	16	91,520	77
Hamilton	15,009	16	240,144	82	8	2,997	17	50,949	68
Hancock	42,821	16	685,136	83	4	21,529	24	516,696	86
Hardin	17,132	15	256,980	78	19	17,432	25	435,800	93
Harrison	9,589	21	201,369	90	9	7,504	20	150,080	87

Henry	26,468	20	529,360	95	14	34,294	25	857,350	78
Highland	44,307	15	664,605	89	4	3,780	30	113,400	68
Hocking	7,031	14	98,434	96	15	1,637	8	13,096	40
Holmes	22,345	19	424,555	96	4	17,432	25	435,800	88
Huron	33,588	18	604,584	95	6	29,552	23	679,696	97
Jackson	6,592	15	98,880	83	....	1,268	15	19,020	72
Jefferson	10,326	19	196,194	88	4	9,280	31	287,680	84
Knox	26,480	16	423,680	95	19	11,199	20	223,980	77
Lake	3,394	20	67,880	90	1	8,007	27	216,189	93
Lawrence	2,437	13	31,681	93	16	3,046	17	51,782	64
Licking	30,421	14	425,894	90	11	11,328	24	271,872	80
Logan	23,436	11	257,796	69	22	26,760	25	669,000	77
Lorain	21,050	17	357,850	88	15	21,347	22	469,634	86
Lucas	7,201	15	108,015	90	6	16,865	23	387,895	94
Madison	22,215	18	399,870	99	9	30,829	19	585,751	74
Mahoning	14,111	14	197,554	88	7	14,147	24	339,528	89
Marion	18,524	18	333,432	90	11	28,715	23	660,445	79
Medina	21,869	18	393,642	95	9	20,878	25	521,950	87
Meigs	10,047	12	120,564	94	5	2,367	15	35,505	77
Mercer	38,352	9	345,168	57	7	47,609	22	1,047,398	78
Miami	41,748	14	584,472	66	5	27,754	22	610,588	74
Monroe	15,142	14	211,988	88	8	7,691	21	161,511	81
Montgomery	40,061	18	721,098	86	19	15,378	17	261,426	66
Morgan	9,969	15	149,535	88	7	2,462	20	49,240	67
Morrow	17,842	18	321,156	97	10	14,754	19	280,326	83
Muskingum	21,598	15	323,970	87	2	6,577	22	144,694	76
Noble	11,535	14	161,490	79	15	3,646	21	76,566	73
Ottawa	13,081	18	235,458	88	3	16,948	30	508,440	86
Paulding	13,645	10	136,450	83	23	45,734	18	823,212	73
Perry	15,398	14	215,572	94	4	1,902	19	36,138	73
Pickaway	54,226	20	1,084,520	99	9	4,324	18	77,832	48
Pike	15,994	11	175,934	85	40	2,927	16	46,832	58
Portage	17,992	18	323,856	95	3	19,354	23	445,142	92
Preble	45,080	16	721,280	99	8	10,316	14	144,424	55
Putnam	36,009	11	396,099	62	9	26,237	23	603,451	81
Richland	33,419	17	568,123	87	6	25,627	22	563,794	72
Ross	45,399	16	726,384	90	19	2,205	23	50,715	73
Sandusky	27,736	18	499,248	85	15	26,921	27	726,867	78
Scioto	14,076	13	182,988	84	5	3,437	21	72,177	84
Seneca	58,632	18	1,055,376	93	10	28,575	24	685,800	84
Shelby	36,678	13	476,814	79	4	39,366	21	826,686	78
Stark	43,408	18	781,344	97	3	31,526	23	725,098	95
Summit	22,190	17	377,230	94	6	19,062	24	457,488	90
Trumbull	11,433	16	182,928	90	3	18,256	22	401,632	86
Tuscarawas	23,492	13	305,396	90	5	17,972	20	359,440	87
Union	18,142	15	272,130	97	4	20,238	23	465,474	86
Van Wert	21,177	10	211,770	52	6	35,024	23	805,552	79
Vinton	5,140	10	51,400	91	....	1,538	15	23,070	68
Warren	30,660	21	643,860	78	11	8,236	20	164,720	38
Washington	17,729	11	195,019	88	6	6,955	14	97,370	68
Wayne	46,023	20	920,460	99	3	30,948	28	866,544	86
Williams	19,421	16	310,736	96	....	25,711	24	617,064	89
Wood	25,751	14	360,514	92	4	59,438	25	1,485,950	91
Wyandot	29,468	15	442,020	93	7	15,257	26	396,682	85
Average per cent	....	15.4	....	88	9	....	22.6	....	78
Totals	2,087,417	....	32,203,181	....	....	1,456,515	....	32,918,284	....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF WHEAT, OATS, BARLEY AND RYE AND THE CONDITION OF OTHER CROPS, OCTOBER 1, 1907.

Counties.	Barley.				Rye.			
	Area of winter and spring as returned by township assessors.	Product per acre estimated from threshers' returns.	Total estimated product for 1907.	Quality compared with an average.	Area as returned by township assessors.	Product per acre estimated from threshers' returns.	Total estimated product for 1907.	Quality compared with an average.
	Acres.	Bushels.	Bushels.	Per cent.	Acres.	Bushels.	Bushels.	Per cent.
Adams	....	....	....	....	271	10	2,710	82
Allen	211	21	6,541	....	1,023	16	16,368	94
Ashland	2	15	30	50	153	9	1.377	88
Ashtabula	....	....	....	....	867	15	13,005	91
Athens	....	....	....	....	24	12	288	100
Auglaize	43	20	860	95	392	17	6,664	88
Belmont	426	20	8,520	....	179	15	2,685	100
Brown	13	21	273	....	1,323	11	14,553	90
Butler	607	32	19,424	93	158	14	2,212	95
Carroll	....	....	....	....	77	10	770	90
Champaign	155	7	1,085	....	1,110	13	14,430	105
Clark	204	20	4,080	65	789	15	11,835	80
Clermont	....	....	....	....	1.177	12	14,124	100
Clinton	42	22	924	....	681	18	12.258	100
Columbiana	....	....	....	....	136	12	1.632	100
Coshocton	....	....	....	....	202	13	2.626	94
Crawford	66	15	990	95	100	15	1,500	100
Cuyahoga	10	20	200	100	315	19	5.985	100
Darke	51	14	714	75	842	17	14,314	91
Defiance	898	21	18.858	92	532	17	9,044	95
Delaware	24	12	288	100	486	14	6,804	95
Erie	235	20	4,700	100	318	17	5,436	92
Fairfield	....	....	....	....	36	18	648	95
Fayette	34	21	714	....	407	19	7.733	100
Franklin	10	20	200	....	434	15	6,510	95
Fulton	2,031	28	56,868	98	1,026	15	15.390	100
Gallia	....	....	....	....	112	10	1,120	85
Geauga	63	23	1,449	95	239	22	5.258	100
Greene	20	22	440	80	966	15	14,490	93
Guernsey	22	21	462	....	123	13	1,599	79
Hamilton	136	20	2,720	70	348	17	5.916	88
Hancock	311	20	6,220	100	526	17	8.942	96
Hardin	96	21	2,016	100	530	23	12,190	84
Harrison	20	20	400	....	46	13	598	92

Henry	3,648	32	116,736	97	1,578	23	36,294	93
Highland	38	21	798		234	14	3,276	89
Hocking					54	12	648	75
Holmes					225	18	4,050	95
Huron	46	21	966	93	76	17	1,292	93
Jackson					21	16	336	92
Jefferson					77	13	1,001	92
Knox					625	12	7,500	94
Lake	57	21	1,197		756	22	16,632	100
Lawrence					36	14	504	87
Licking					783	14	10,962	91
Logan	266	26	6,916	92	1,425	34	48,450	93
Lorain	62	20	1,240		214	17	3,638	89
Lucas	1,168	24	28,032	95	1,332	14	18,648	97
Madison	217	22	4,774		405	12	4,860	99
Mahoning					137	18	2,466	93
Marion					185	14	2,590	95
Medina	56	21	1,176		602	20	12,040	100
Meigs	1	25	25	100	20	15	300	88
Mercer	438	28	12,264	88	555	13	7,215	98
Miami	15	20	300		140	11	1,540	80
Monroe					128	11	1,408	90
Montgomery	73	20	1,460	70	586	13	7,618	92
Morgan					24	14	336	90
Morrow					288	15	4,320	100
Muskingum					234	18	4,212	86
Noble					61	15	915	83
Ottawa	1,073	18	19,314	75	460	15	6,900	100
Paulding	268	20	5,360		1,715	18	30,870	93
Perry					48	13	624	88
Pickaway					196	27	5,292	80
Pike					71	18	1,278	88
Portage	11	17	187	95	171	16	2,736	90
Preble	69	21	1,449		371	12	4,452	100
Putnam	1,255	28	35,140	88	742	19	14,098	94
Richland	28	21	588	85	255	15	3,825	85
Ross					255	24	6,120	85
Sandusky	162	40	6,480	85	350	18	6,300	73
Scioto					61	18	1,098	100
Seneca	238	20	4,760		204	18	3,672	100
Shelby	26	25	650	80	356	16	5,696	88
Stark					210	13	2,730	90
Summit	75	21	1,575		223	19	4,237	88
Trumbull	14	20	280		265	14	3,710	90
Tuscarawas					269	15	4,035	92
Union	26	22	572		1,733	16	27,728	100
Van Wert	1,192	25	29,800	64	1,604	20	32,080	93
Vinton					24	14	336	92
Warren	80	21	1,680		609	14	8,526	88
Washington					102	9	918	95
Wayne	23	20	460	80	68	15	1,020	92
Williams	2,291	26	59,566	84	806	20	16,120	100
Wood	1,041	27	28,107	85	896	23	20,608	92
Wyandot					151	19	2,869	97
Average per cent		25.9		86		17		92
Totals	19,747		510,828		38,965		661,943	

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF WHEAT, OATS, BARLEY AND RYE AND THE CONDITION OF OTHER CROPS, OCTOBER 1, 1907.

Counties.	Alfalfa.		Corn.			Potatoes.	Tobacco.	Pastures.	Apples.
	Number of cuttings this year.	Total tons produced per acre from all cuttings.	Prospect compared with an average.	Cut up for fodder.	Date of cutting for fodder, days after Sept. 1st.	Probable total yield compared with an average.	Condition compared with an average.	Condition compared with an average.	Prospect compared with an average.
	Number.	Tons.	Per cent.	Per cent.	Days.	Per cent.	Per cent.	Per cent.	Per cent.
Adams	3.0	2.6	89	66	20	65	84	97	25
Allen	2.5	2.8	84	79	21	65	....	104	31
Ashland	....	....	63	100	28	40	....	50	5
Ashtabula	....	....	55	35	25	62	....	98	11
Athens	3.0	3.3	84	50	21	77	....	107	14
Auglaize	2.5	2.5	78	77	23	44	....	85	14
Belmont	2.7	3.2	73	....	30	76	82	109	7
Brown	2.7	3.7	88	19	24	80	89	115	49
Butler	2.3	2.3	95	8	24	75	94	109	8
Carroll	....	....	63	....	30	76	....	100	24
Champaign	3.0	2.5	73	95	24	57	100	103	8
Clark	3.0	3.5	83	67	19	63	80	93	25
Clermont	3.0	3.0	100	....	....	50	75	90	40
Clinton	3.0	3.5	78	40	24	55	....	100	6
Columbiana	2.0	1.5	78	90	30	75	....	87	16
Coshocton	....	....	79	98	28	62	....	83	5
Crawford	....	....	65	53	28	49	....	88	6
Cuyahoga	....	....	58	55	20	58	....	78	14
Darke	2.0	3.0	76	66	23	54	78	93	25
Defiance	3.0	3.8	47	37	20	55	....	103	23
Delaware	2.7	2.8	60	95	23	71	....	97	11
Erie	....	....	75	85	....	75	....	100	25
Fairfield	....	....	89	61	28	66	....	103	35
Fayette	3.0	4.3	91	54	26	77	100	100	35
Franklin	3.0	4.8	74	92	20	54	....	96	15
Fulton	3.0	3.5	68	20	28	88	....	100	70
Gallia	....	....	94	98	24	80	80	103	10
Geauga	....	....	69	45	27	66	....	84	15
Greene	3.0	4.2	88	78	22	84	85	109	22
Guernsey	....	....	66	97	26	56	50	97	13
Hamilton	3.6	2.8	97	73	22	56	85	101	45
Hancock	....	....	81	79	24	66	....	95	37
Hardin	3.0	3.9	66	73	22	69	....	95	13
Harrison	....	....	66	100	27	74	....	101	14

Henry	3.0	1.5	80	67	25	79		98	51
Highland	3.5	2.8	82	87	23	77	80	93	36
Hocking			87	100	30	58		97	95
Holmes	3.0	4.5	81	82	31	91		88	3
Huron	3.0	4.5	60	98	29	58		83	23
Jackson			84	87	23	74		100	45
Jefferson			76	75	26	74		99	19
Knox	2.0	2.0	68	88	25	61		96	7
Lake	2.0	4.0	65	100	31	60	100	100	45
Lawrence	3.0	5.3	73	68	23	66	93	101	16
Licking	2.0	3.0	73	82	26	61		99	9
Logan	3.0	2.7	71	92	24	68		96	28
Lorain	1.0	1.5	53	67	26	61	25	76	23
Lucas	3.0	2.6	73	74	26	77		108	18
Madison	3.0	3.0	74	73	22	72		96	28
Mahoning			56	77	32	63		86	8
Marion	2.0	4.0	71	56	27	60	75	96	9
Medina			67	98	31	50	73	66	19
Meigs	3.0	2.0	88	97	25	69		103	19
Mercer	3.0	2.0	79	71	22	72		89	29
Miami	3.0	3.3	92	73	24	61	85	106	15
Monroe			76	66	26	68	79	108	20
Montgomery	2.0	2.3	91	84	24	58	86	96	22
Morgan	3.0	3.3	68	97	25	67	93	107	19
Morrow	3.5	3.0	65	97	28	63		100	5
Muskingum	3.0	3.0	68	92	30	57		107	14
Noble	2.0	4.0	59	100	25	60	87	111	28
Ottawa	3.0	7.0	70	100	20	63		85	30
Paulding			52	95	23	35		95	50
Perry	2.0	2.3	79	98	28	69		100	21
Pickaway	2.7	3.3	90	98	26	69		98	59
Pike			87	100	25	50	75	80	11
Portage			69	100	28	72		88	14
Preble			105	50	28	50	90	103	10
Putnam	2.5	2.5	60	73	20	59	95	95	19
Richland			65		25	57		74	12
Ross	2.3	2.5	88	85	27	69	78	96	42
Sandusky	3.0	2.3	62	92	25	73		86	33
Scioto	2.0	4.0	89	67	24	77	70	96	41
Seneca	2.0	2.7	60	77	22	47		83	18
Shelby	3.0	2.3	63	90	27	63	62	95	15
Stark			78	95	31	55		82	8
Summit			52	80	35	62		82	19
Trumbull	1.0	1.0	54	59	25	58		86	11
Tuscarawas	1.0	2.0	64	78	28	67		85	18
Union	2.5	2.5	63	81	26	79		102	18
Van Wert			67	74	24	71		81	21
Vinton			81	98	26	79		107	15
Warren	3.0	3.0	85		30	80	90	105	10
Washington	3.0	4.0	79	98	25	73	80	111	15
Wayne			69	85	31	60		78	9
Williams	3.0	4.0	66	48	26	81		97	28
Wood	3.0	3.0	72	62	23	68		92	55
Wyandot	3.0	5.0	73	85	22	72		94	19
Average per cent			74	77	Sep. 25	65	81	95	23
Average number cuttings 1907	2.7								
Average tons per acre		3.1							

OFFICIAL REPORT

OF THE

OHIO DEPARTMENT OF AGRICULTURE

ON THE

Acreage and Condition of Crops

NOVEMBER 1, 1907

The following report indicates the acreage and condition of the crops named, as computed from the returns received from the official crop and live stock correspondents of the department:

WHEAT—Area sown last fall as returned by township assessors	2,087,418 acres.
" —Sown this fall compared with last year	88 per cent.
" —Estimated area seeded for the harvest of 1908	1,843,859 acres.
" —Condition compared with an average	82 per cent.
" —Average date of seeding	October 1.
RYE—Area sown last fall as returned by township assessors	38,965 acres.
" —Sown this fall compared with last year	90 per cent.
" —Estimated area seeded for the harvest of 1908	34,930 acres.
" —Condition compared with an average	85 per cent.
CORN—Prospect compared with an average	73 per cent.
BUCKWHEAT—Prospect compared with an average	83 per cent.
CLOVER SEED—Prospect compared with an average	47 per cent.
POTATOES—Area planted as estimated by township assessors	119,842 acres.
" —Average product per acre	80 bushels.
" —Total estimated product for 1907	9,585,391 bushels.
" —Affected by rot	6 per cent.
HOGS—Condition compared with an average	93 per cent.
" —Number to be fattened compared with 1906	86 per cent.
COMMERCIAL FERTILIZERS—On what per cent. of wheat ground used	62 per cent.

Ohio again records a very low wheat area, as from the percentage estimates of the official correspondents of this department, it is computed that the area seeded this fall for next year's harvest is but 88 per cent. in comparison with the area seeded last fall. This gives a total of 1,843,859 acres, one of the lowest in a number of years, and from which we cannot hope to produce an average crop unless the average production per acre should be a record breaker. The decline in acreage is principally attributed to the fact that corn was so late in maturing that much ground intended for wheat was abandoned. The condition of the growing plant is estimated at 82 per cent. compared with an average. The seeding, generally, was very late and in most parts of the state it has been too dry since that time for proper germination and strong growth. Many correspondents report that it is impossible at this time to accurately estimate the condition of the growing plant, as it has as yet made little or no showing above the ground, others report it as thin and weak. The most favorable reports are on the wheat which was seeded early. Some fear has been expressed that the wheat plant will be so tender and of not sufficient root growth to withstand the rigors of severe weather should we have an early winter.

The area sown to rye is estimated at 34,930 acres as against 38,965 acres sown one year ago. The condition of the crop is estimated at 85 per cent. compared with an average.

The corn prospect is practically the same as reported last month, being now estimated at 73 per cent. compared with an average. The complaint of damage by frost is very general and much of the crop did not mature, resulting, as the husking shows, in much soft and unmerchantable corn. The area planted this year is greater than for the preceding year, but the harvest will fall far short of that crop, as in 1906 Ohio produced her banner corn yield.

The area planted to potatoes this year as reported by the township assessors is almost three thousand acres greater than one year ago, but the estimated production now reported is 3,613,570 bushels short of the estimate of last year. The average production per acre this year is eighty bushels, while last year the average yield per acre was 107 bushels. Rot is reported in almost every county in the state, the damage from this cause ranging from 1 to 25 per cent., the general average for the state as a whole being estimated at 6 per cent.

About the usual number of hogs is being fattened, although many small hogs are being sent to market owing to high prices prevailing.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE AREA OF WHEAT AND RYE, AREA AND PRODUCTION OF POTATOES AND THE CONDITION OF OTHER CROPS, NOVEMBER 1, 1907.

Counties.	Wheat.					Rye.				Corn.	Buck-wheat	Clover Seed	Potatoes.				Hogs.		Com. Fert.
	Area sown last fall as returned by township assessors.	Sown this fall compared with last year.	Estimated area seeded for the harvest of 1908.	Condition compared with an average.	When sown days after September 15th.	Area sown last fall as returned by township assessors.	Sown this fall compared with last year.	Estimated area seeded for the harvest of 1908.	Condition compared with an average.	Prospect compared with an average.	Prospect compared with an average.	Prospect compared with an average.	Area planted as estimated by township assessors.	Average product per acre.	Total estimated product for 1907.	Affected by rot.	Condition compared with an average.	Number to be fattened compared with 1906.	On what per cent. of wheat ground used.
	Acres.	Per ct.	Acres.	Per ct.		Acres.	Per ct.	Acres.	Per ct.	Per ct.	Per ct.	Per ct.	Acres.	Bu.	Bu.	Per ct.	Per ct.	Per ct.	Per ct.
Adams	16,770	93	15,596	90	26	271	76	206	88	82	75	50	229	70	16,030	8	85	77	74
Allen	20,543	83	17,051	88	12	1.023	109	1,115	91	79	......	74	518	60	31,080	2	93	94	24
Ashland	27,367	88	24,083	75	12	153	100	153	90	75	......	50	1.171	110	128,810	5	90	80	55
Ashtabula	6,643	98	6.510	93	8	867	70	607	88	39	92	47	3,588	51	182,988	5	94	96	94
Athens	7,274	98	7,129	84	27	24	100	24	88	83	93	45	616	79	48,664	4	98	101	91
Auglaize	27,884	83	23,144	83	16	392	97	380	87	81	......	51	828	78	64,584	1	101	82	23
Belmont	15,582	92	14,335	93	14	179	93	166	98	78	95	67	932	103	95,996	5	97	90	59
Brown	18,603	93	17,301	90	22	1.323	102	1,349	90	77	85	81	418	88	36,784	2	88	70	85
Butler	57,452	95	54.579	85	15	158	100	158	95	95	100	4	1,413	75	105.975	3	92	93	2
Carroll	12,972	95	12.323	92	9	77	88	68	78	66	85	48	648	88	57,024	5	87	84	90
Champaign	29,103	81	23.573	71	22	1,110	93	1,032	72	82	......	24	429	73	31,317	6	98	85	58
Clark	32,342	99	32,019	83	17	789	78	615	68	81	80	20	885	63	55,755	5	100	86	46
Clermont	15,112	100	15,112	88	15	1,177	100	1,177	95	95	......	......	719	60	43,140	8	100	85	74
Clinton	41,838	93	38,909	77	25	681	97	661	88	94	80	27	265	42	11,130	4	99	96	88
Columbiana	18,785	97	18,221	90	10	136	91	124	88	76	100	78	2,233	86	192,038	1	93	89	83
Coshocton	21,182	94	19.911	74	12	202	95	192	78	72	75	48	1,086	74	80.364	7	92	81	70
Crawford	28,243	94	26.548	88	13	100	95	95	88	61	......	45	1,524	85	129,540	3	92	87	68
Cuyahoga	6,619	99	6,553	97	11	315	88	277	95	68	......	75	6,272	70	439,040	3	91	84	95
Darke	57,644	88	50,727	71	13	842	88	741	69	73	......	23	790	59	46,610	2	87	86	25
Defiance	19,206	64	12,292	65	18	532	75	399	75	47	......	37	692	67	46,364	9	86	89	4
Delaware	16,754	91	15,246	71	28	486	113	549	83	65	90	59	563	83	46,729	3	91	88	69
Erie	15,538	85	13,207	83	5	318	50	159	50	73	100	100	3,109	95	295,355	5	100	100	57
Fairfield	42,728	93	39,737	62	21	36	88	32	63	87	......	36	742	105	77,910	8	92	87	86
Fayette	36,479	94	34.290	76	19	407	75	305	80	95	......	20	5	65	325	4	91	86	90
Franklin	32,570	91	29,639	71	22	434	86	373	66	67	65	33	2,287	84	192.108	3	91	72	75
Fulton	14,724	90	13,252	90	9	1,026	89	913	92	70	88	49	971	93	90,303	13	90	91	12
Gallia	12,059	90	10,853	80	23	112	65	73	83	90	40	65	248	93	23,064	7	71	83	73
Geauga	6,719	94	6,316	88	7	239	100	239	88	64	97	......	3,206	68	218,008	4	95	88	96
Greene	43,575	97	42,268	84	24	966	96	927	94	95	......	11	780	81	61,180	7	90	92	49
Guernsey	11,068	93	10,293	79	18	123	98	121	90	61	78	32	519	98	50,862	8	96	83	80
Hamilton	15,009	94	14,108	96	22	348	78	261	94	95	......	80	4,042	74	299.108	4	95	91	33
Hancock	42,821	86	36,826	76	24	526	91	479	83	75	90	36	613	74	45,362	4	100	93	26
Hardin	17,132	89	15,247	83	11	530	95	504	83	71	75	69	1,472	83	122,176	3	91	98	5

Harrison	9,589	94	9,014	85	10	46	70	32	100	57	62	32	127	68	8,636	5	90	83	78
Henry	26,468	92	24,351	89	13	1,578	73	1,152	93	75	100	41	634	89	56,426	22	87	88	2
Highland	44,307	89	39,433	74	24	234	85	199	70	83	75	46	136	67	9,112	4	95	91	91
Hocking	7,061	97	6,820	69	34	54	79	43	75	87	92	62	558	63	35,154	6	99	95	100
Holmes	22.345	95	21,228	87	13	225	92	207	85	83	78	57	520	105	54.600	2	97	97	81
Huron	33.588	96	32,244	96	19	76	98	74	92	60	62	49	1,366	88	120.208	3	92	72	83
Jackson	6.592	96	6,328	76	29	21	80	17	83	77	85	......	123	78	9,594	9	93	87	97
Jefferson	10,326	92	9,500	82	20	77	100	77	95	65	105	16	665	100	66,500	5	93	78	78
Knox	26,480	86	22,773	71	13	625	79	494	73	72	60	37	471	85	40,035	5	89	83	75
Lake	3.394	78	2,647	95	26	756	67	507	92	40	100	100	2,075	53	109,975	9	90	75	63
Lawrence	2,437	75	1,828	60	35	36	80	29	75	80	......	......	309	60	18,540	20	100	50	25
Licking	30,421	89	27,075	74	19	783	72	564	67	81	87	62	1,312	99	129,888	3	95	86	71
Logan	23,436	82	19,218	78	18	1,425	91	1,297	84	82	90	25	472	97	45,784	21	96	88	41
Lorain	21,050	93	19,577	92	15	214	88	188	100	52	90	38	3,385	70	236,950	4	94	71	82
Lucas	7.201	92	6,625	100	5	1,332	103	1,372	95	72	93	32	3,083	117	360,711	10	98	97	27
Madison	22,215	98	21,771	79	24	405	95	385	79	75	100	30	238	71	16,898	1	98	97	22
Mahoning	14,111	96	13,547	92	11	137	88	121	96	51	80	70	2,414	66	159,324	1	92	88	91
Marion	18,524	83	15,375	79	13	185	92	170	86	65	90	40	796	87	69,252	4	91	85	29
Medina	21,869	96	20,994	81	13	602	77	464	76	63	......	53	3,508	86	301,688	......	88	76	98
Meigs	10,047	85	8,540	86	28	20	75	15	83	83	100	95	498	106	52,788	15	98	83	83
Mercer	38,352	79	30,298	76	18	555	88	488	63	85	......	10	1,153	63	72,639	2	93	86	32
Miami	41,748	84	35,068	82	15	140	75	105	81	87	......	10	1,024	72	73,728	5	94	84	65
Monroe	15,142	104	15.748	87	16	128	87	111	83	68	78	58	1,255	80	100,400	25	98	97	62
Montgomery	40,061	91	36,456	78	22	586	86	504	86	88	31	27	1,079	73	78,767	6	97	83	79
Morgan	9,969	93	9,271	78	22	24	73	18	87	70	68	41	307	81	24,867	5	92	79	91
Morrow	17.842	92	16,415	83	15	288	95	274	81	63	......	31	1,047	97	101.559	3	88	86	90
Muskingum	21,598	93	20,086	69	23	234	77	180	72	70	100	53	989	71	70,219	8	88	79	91
Noble	11,535	82	9,459	61	27	61	100	61	70	61	45	20	424	81	34,344	18	89	71	69
Ottawa	13,081	100	13,081	100	1	460	100	460	100	75	......	75	593	75	44,475	......	100	100	....
Paulding	13,645	52	7.095	88	18	1,715	100	1,715	100	53	......	75	298	75	22,350	......	92	77	....
Perry	15,398	99	15,244	81	25	48	80	38	75	85	100	37	686	68	46,648	5	98	91	98
Pickaway	54,226	94	50.972	70	21	196	82	161	85	100	......	18	284	84	23,656	2	99	94	81
Pike	15.994	97	15,514	78	29	71	69	49	81	78	93	66	700	64	44,800	12	89	92	82
Portage	17,992	99	17,812	91	23	171	97	166	88	63	81	58	7,115	92	654,580	1	91	86	93
Preble	45.080	100	45,080	105	12	371	90	334	80	90	......	55	642	62	39,804	......	100	97	95
Putnam	36.009	56	20,165	78	17	742	87	646	98	65	93	41	939	69	64,791	2	97	88	....
Richland	33,419	91	30,411	75	11	255	80	204	72	59	80	57	1,975	81	159,975	4	90	87	63
Ross	45,399	95	43.129	79	25	255	80	204	78	87	83	36	835	61	50,935	1	92	84	71
Sandusky	27,736	87	24,130	90	10	350	77	270	100	72	......	30	2,350	108	253.800	2	83	72	47
Scioto	14,076	96	13,513	87	27	61	100	61	90	84	103	78	1,540	75	115,500	1	97	88	83
Seneca	58,632	92	53,941	77	15	204	100	204	100	59	......	36	1,840	50	92,000	2	90	81	84
Shelby	36.678	100	36,678	85	7	356	88	313	95	73	......	50	611	63	38,493	......	100	87	57
Stark	43,408	105	45,578	93	5	210	88	185	95	71	85	57	4,456	100	445.600	1	105	94	68
Summit	22,190	88	19,527	82	9	223	75	167	77	54	70	54	4,137	87	359.919	2	89	80	75
Trumbull	11,433	97	11,090	95	4	265	100	265	97	58	98	......	3,394	58	196,852	2	93	78	102
Tuscarawas	23,492	91	21.378	80	8	269	86	231	94	62	70	49	1,851	88	162,888	3	88	84	66
Union	18,142	65	11,792	80	18	1,733	90	1,560	70	73	......	......	343	140	48,020	5	90	80	25
Van Wert	21,177	64	13,553	64	14	1,604	100	1,604	75	54	......	35	754	99	74,646	......	88	82	....
Vinton	5,140	93	4,780	75	28	24	100	24	75	83	99	41	171	69	11.799	6	98	84	97
Warren	30.660	102	31,273	92	20	609	103	627	93	80	......	50	177	50	8,850	2	100	102	85
Washington	17,729	92	16,311	77	24	102	100	102	110	78	......	63	1,651	63	104.013	12	98	98	78
Wayne	46.023	93	42.701	80	9	68	100	68	88	74	50	45	6,575	80	526,000	......	91	91	75
Williams	19,421	90	17.479	86	6	806	95	766	95	66	90	87	682	82	55,924	13	90	89	....
Wood	25,751	87	22,403	85	13	896	85	762	85	68	70	36	950	82	77,900	17	86	90	18
Wyandot	29,468	86	25,342	76	20	151	81	122	88	76	93	43	512	72	36,864	9	97	95	68
Average per cent	....	88	....	82	Oct.	....	90	....	85	73	83	47	....	80	....	6	93	86	62
Totals	2,087,418	......	1,843,859	......	1	38,965	......	34,930	......	.....	......	......	119,842	......	9,585,391	......	......	......	....

OFFICIAL REPORT

OF THE

Ohio Department of Agriculture

ON THE

ACREAGE AND PRODUCT OF CORN AND THE CONDITION OF OTHER CROPS.

DECEMBER 1, 1907.

The following report of the estimated corn production for the present year, and the condition of other crops, is computed from the returns received from the official township crop correspondents of this department:

Wheat—Condition compared with an average	80 per cent.
Wheat—Amount of crop of 1907 sold as soon as threshed	43 per cent.
Wheat—Damage to growing crop by Hessian fly	1 per cent.
Wheat—Damage to growing crop by white grub	0.66 per cent.
Corn—Area planted in 1907 as returned by township assessors	2,944,691 acres
Corn—Average yield per acre	34.7 bushels
Corn—Total estimated product for 1907	102,284,045 bushels
Corn—Put into silo	4 per cent.
Corn—Average date cribbing began	October 31
Clover—Area sown in 1906 cut for seed	47 per cent.
Clover—Average yield per acre	1.02 bushels
Apples—Probable total yield compared with an average	21 per cent.
Tobacco—Probable average product per acre	919 pounds
Cattle—Number being fed for spring market compared with last year	62 per cent.
Sheep—Number being fed for mutton compared with last year	66 per cent.

Wheat shows a decline of 2 per cent. in condition from the estimate issued by this department one month ago, being now reported at 80 per cent. compared with an average. This unsatisfactory condition is due principally to the fact that a greater percentage of wheat ground was seeded unusually late, and weather conditions following the seeding were unfavorable to its growth. Of the eighty-eight counties of the state but two now report its condition as equal to an average; fourteen counties estimate its condition at 90 per cent. or better, while for the balance of the counties the estimates range from 50 to 89 per cent. The damage reported by Hessian fly and other insects is less than 2 per cent.

This is the first report of the year estimating corn production in bushels and shows that the average yield per acre, 34.7 bushels, is almost nine bushels per acre less than last year. The total production for the state as a whole is estimated at 102,284,045 bushels, being approximately 25,000,000 bushels short of the harvest of 1906 as returned by the township assessors.

The quality of the crop is far below an average, the correspondents generally noting the fact that a large percentage is soft and unmerchantable.

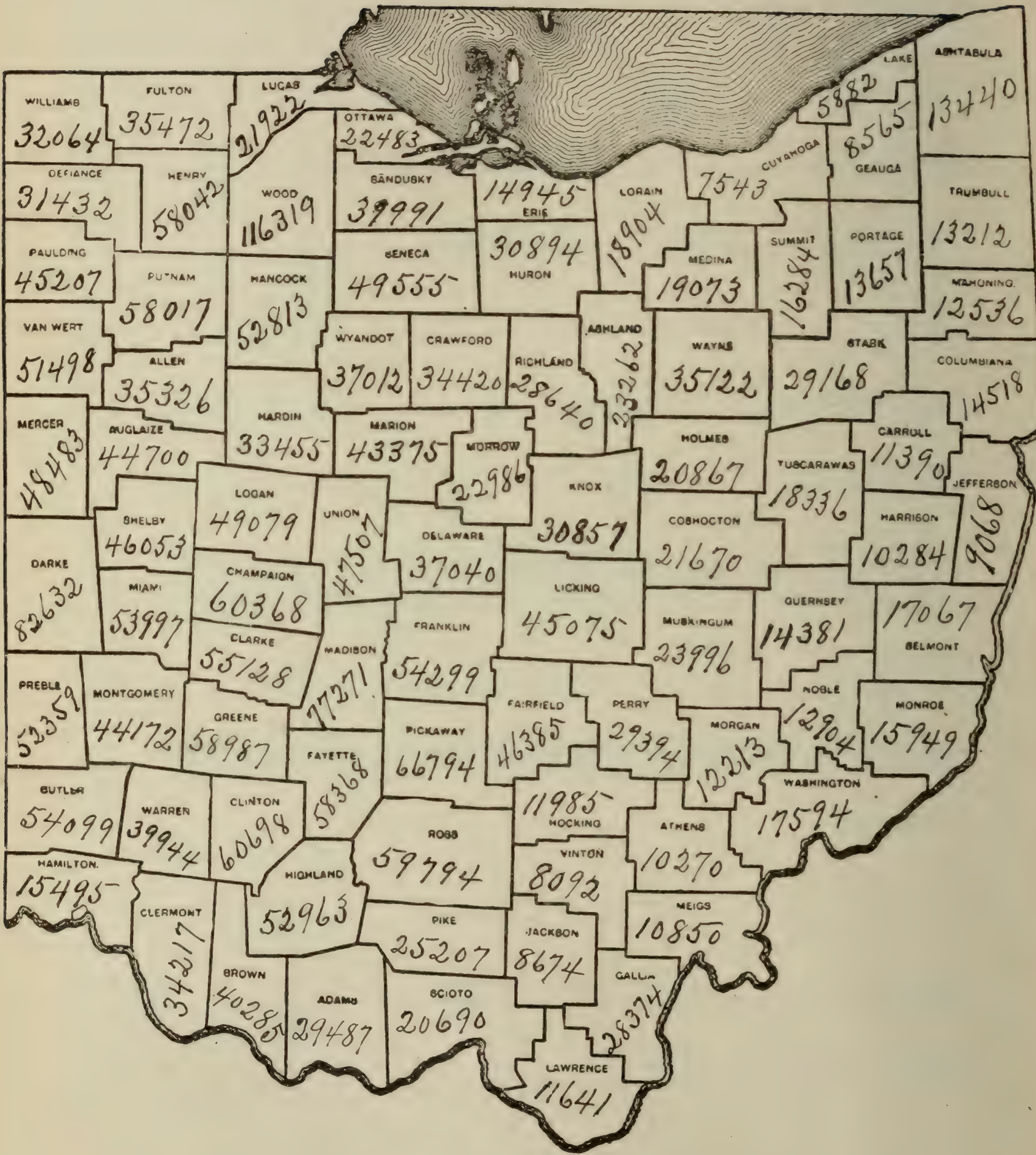
Apples are practically a failure, the report showing that the probable total yield is but 21 per cent. compared with an average.

The number of cattle being fed for spring markets is estimated at 62 per cent. compared with last year.

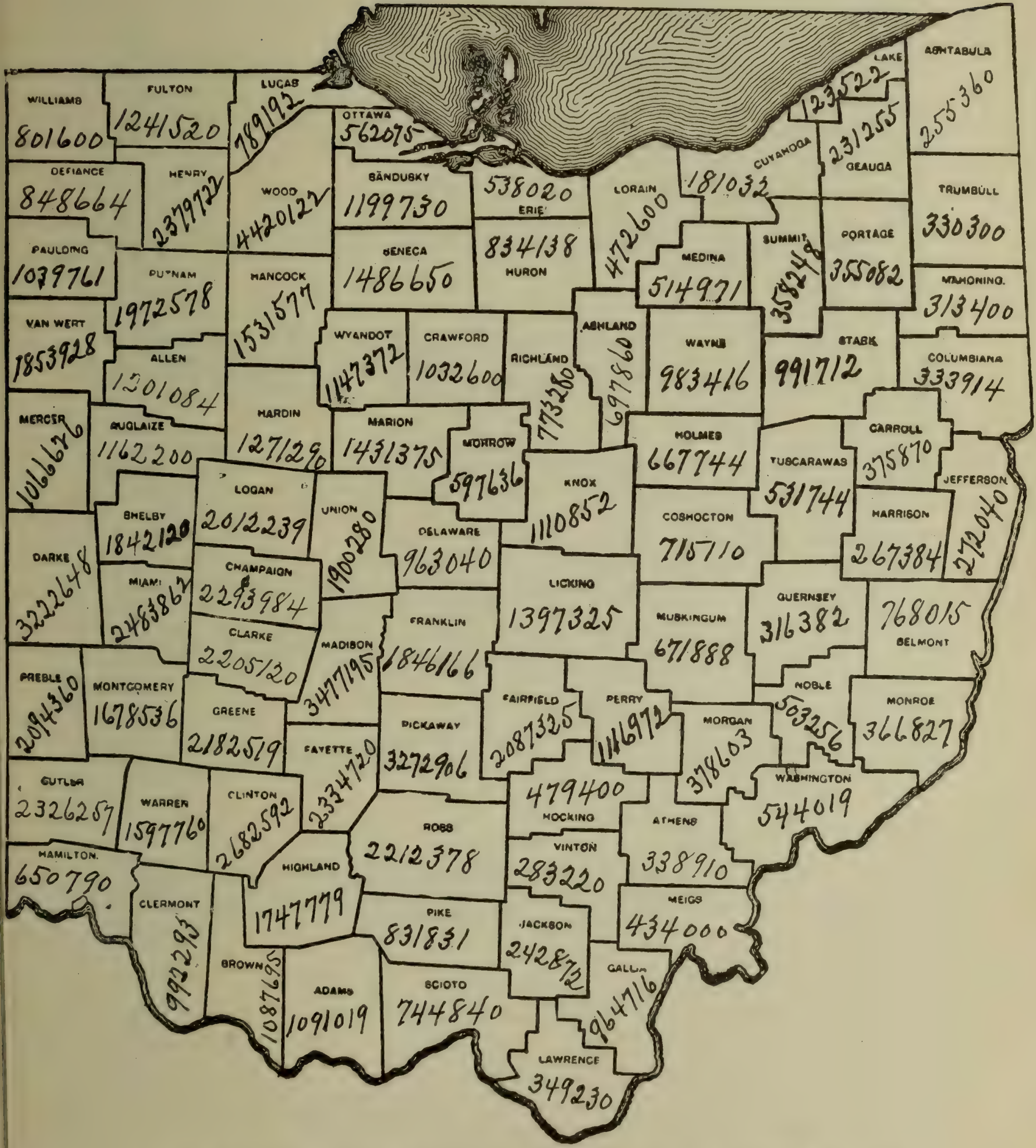
OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCTION OF CORN AND THE CONDITION OF OTHER CROPS DECEMBER 1, 1907.

COUNTIES.	Wheat.				Corn.					Clover.		Apples.	Tobacco.	Cattle.	Sheep.
	Condition compared with an average.	Amount of crop of 1907 sold as soon as threshed.	Damage to growing crop by Hessian fly.	Damage to growing crop by white grub.	Area planted in 1907 as returned by township assessors.	Average yield per acre.	Total estimated product for 1907.	Put into silo.	Date cribbing began days after Oct. 1.	Area sown in 1906 cut for seed.	Average yield per acre.	Probable total yield compared with an average.	Probable average product per acre.	Number being fed for spring market compared with last year.	Number being fed for mutton compared with last year.
	per ct.	per ct.	per ct.	per ct.	acres.	bushels.	bushels.	per ct.	days.	per ct.	bushels.	per ct.	pounds.	per ct.	per ct.
Adams	85	55	4	3	29,487	37	1,091,019	10	38	18	1.00	22	850	41	55
Allen	93	56	1	....	35,326	34	1,201,084	....	25	8	.81	12	....	78	75
Ashland	65	32	....	2	23,262	30	697,860	....	30	15	1.00	7	....	65	60
Ashtabula	89	24	1	1	13,440	19	255,360	35	27	3	1.50	20	....	68	74
Athens	92	30	....	....	10,270	33	338,910	3	39	....	....	17	....	88	60
Auglaize	91	87	1	....	44,700	26	1,162,200	1	27	10	1.00	30	400	63	77
Belmont	82	19	3	1	17,067	45	768.015	6	37	6	2.00	3	1,500	77	65
Brown	85	35	5	3	40,285	27	1,087,695	8	30	10	1.33	28	825	85	77
Butler	83	30	....	....	54,099	43	2,326.257	1	40	10	.25	8	1,000	78	75
Carroll	88	34	....	....	11,390	33	375,870	6	39	16	.50	35	....	50	44
Champaign	75	62	....	....	60,368	38	2,293.984	....	32	27	1.50	8	....	65	67
Clark	80	25	....	....	55,128	40	2,205,120	10	41	2	1.00	10	....	50	100
Clermont	96	44	1	....	34,217	29	992,293	3	34	5	2.33	34	700	47	53
Clinton	80	67	....	1	60,968	44	2.682.592	2	38	10	.94	10	800	75	72
Columbiana	87	22	....	....	14,518	23	333,914	9	38	1	2.00	12	....	60	55
Coshocton	80	34	....	....	21,670	33	715,110	....	32	29	1.05	8	....	69	75
Crawford	83	33	....	....	34,420	30	1,032,600	1	31	5	1.25	3	....	5	51
Cuyahoga	93	25	....	....	7,543	24	181,032	14	31	6	2.50	15	....	95	98
Darke	71	68	1	2	82,632	39	3,222,648	2	36	24	.79	18	858	65	43
Defiance	55	33	2	....	31,432	27	848,664	....	20	27	1.33	32	....	63	62
Delaware	78	48	....	....	37.040	26	963,040	5	34	5	1.56	27	....	26	30
Erie	94	63	1	....	14,945	36	538,020	....	37	10	1.00	49	....	43	83
Fairfield	68	47	....	1	46.385	45	2,087.325	3	34	14	1.00	35	....	82	70
Fayette	75	60	....	....	58,368	40	2,334,720	2	43	1	2.00	15	....	15	55
Franklin	78	58	3	....	54,299	34	1,846,166	5	29	10	1.19	17	....	76	83
Fulton	100	25	1	....	35,472	35	1,241,520	1	20	20	1.00	60	....	100	100
Gallia	79	54	....	6	28.374	34	964,716	3	33	....	....	15	1,000	45	60
Geauga	88	27	1	2	8.565	27	231.255	39	31	....	....	14	....	67	75
Greene	84	44	2	1	58,987	37	2,182,519	16	39	8	1.00	40	300	92	73
Guernsey	75	35	1	1	14,381	22	316,382	....	33	5	1.00	17	....	66	71
Hamilton	94	40	....	....	15,495	42	650,790	4	26	....	....	12	....	70	50
Hancock	69	48	3	1	52,813	29	1,531.577	2	32	7	.83	36	....	31	75
Hardin	77	52	1	1	33,455	38	1,271,290	2	35	30	1.70	18	....	54	53
Harrison	92	20	....	....	10,284	26	267,384	....	28	42	.83	14	....	44	65
Henry	68	68	....	....	58,042	41	2,379,722	....	24	48	1.88	48	....	71	60

Highland	79	41	2	1	52,963	33	1,747,779	8	33	23	1.16	34	....	69	73
Hocking	83	23	8	1	11,985	40	479,400	6	50	26	1.13	100	....	69	70
Holmes	85	35	2	....	20,867	32	667,744	1	27	45	1.17	13	....	90	95
Huron	87	51	2	4	30,894	27	834,138	3	33	40	1.42	22	....	68	81
Jackson	79	35	1	....	8,674	28	242,872	....	25	....	....	19	....	50	....
Jefferson	60	70	....	....	9,068	30	272,040	15	30	....	....	10	....	....	....
Knox	68	48	3	2	30,857	36	1,110,852	1	22	17	1.30	7	....	63	75
Lake	72	20	....	....	5,882	21	123,522	13	37	....	....	29	....	50	50
Lawrence	100	50	....	....	11,641	30	349,230	....	30	....	....	25	....	....	....
Licking	78	42	1	....	45,075	31	1,397,325	4	31	16	1.08	8	....	55	61
Logan	69	60	1	....	49,079	41	2,012,239	1	32	10	1.50	19	....	64	72
Lorain	90	45	....	....	18,904	25	472,600	27	35	3	.50	5	....	75	50
Lucas	88	76	....	....	21,922	36	789,192	1	26	23	.75	14	....	87	88
Madison	95	90	....	....	77,271	45	3,477,195	1	45	1	1.00	10	....	60	....
Mahoning	75	25	....	....	12,536	25	313,400	10	40	10	1.00	10	....	50	50
Marion	73	59	....	....	43,375	33	1,431,375	1	27	31	1.32	9	....	63	63
Medina	77	14	....	....	19,073	27	514,971	3	38	20	.41	5	1,000	23	28
Meigs	80	25	....	....	10,850	40	434,000	10	30	5	2.00	25	....	75	75
Mercer	67	40	2	....	48,483	22	1,066,626	....	22	....	.75	38	....	55	57
Miami	77	56	2	1	53,997	46	2,483,862	1	28	8	.63	22	900	78	80
Monroe	80	1	....	....	15,949	23	366,827	1	32	10	2.00	50	1,800	80	....
Montgomery .	74	41	3	....	44,172	38	1,678,536	6	21	17	1.50	18	812	86	72
Morgan	90	44	....	1	12,213	31	378,603	....	30	5	1.50	20	....	48	58
Morrow	82	43	....	2	22,986	26	597,636	2	28	26	.77	20	....	58	75
Muskingum ...	69	29	....	1	23,996	28	671,888	3	30	10	1.00	10	....	63	72
Noble	81	25	1	1	12,904	39	503,256	....	41	75	3.50	28	767	60	73
Ottawa	78	50	....	....	22,483	25	562,076	1	31	75	1.00	25	....	5	5
Paulding	88	50	....	....	45,207	23	1,039,761	....	30	75	2.50	25	....	....	90
Perry	75	28	....	....	29,394	38	1,116,972	3	37	26	.80	15	....	64	71
Pickaway	61	59	....	....	66,794	49	3,272,906	1	41	8	.75	43	....	97	100
Pike	80	45	....	....	25,207	33	831,831	....	33	5	1.00	5	....	25	....
Portage	74	43	1	1	13,657	26	355,082	14	19	25	.50	12	....	26	30
Preble	90	50	1	1	52,359	40	2,094,360	....	40	10	.25	10	825	100	100
Putnam	74	70	1	....	58,017	34	1,972,578	....	26	26	1.75	26	....	41	50
Richland	70	33	5	5	28,640	27	773,280	....	20	20	1.06	5	....	32	33
Ross	73	38	2	1	50,794	37	2,212,378	....	32	24	1.40	28	1,500	56	55
Sandusky	75	50	3	2	39,991	30	1,199,730	....	30	5	1.50	25	....	75	60
Scioto	73	32	2	....	20,690	36	744,840	....	38	20	2.00	24	1,000	78	100
Seneca	73	34	....	....	49,555	30	1,486,650	....	25	11	.67	15	....	43	58
Shelby	80	43	....	....	46,053	40	1,842,120	....	15	....	....	43	....	63	25
Stark	92	30	3	1	29,168	34	991,712	4	34	11	1.37	14	850	51	57
Summit	82	38	3	1	16,284	22	358,248	17	34	10	.92	12	....	47	47
Trumbull	85	47	4	2	13,212	25	330,300	32	27	30	1.50	13	....	70	80
Tuscarawas ..	83	43	5	....	18,336	29	531,744	2	31	14	1.19	13	....	73	71
Union	75	65	....	....	47,507	40	1,900,280	....	40	5	....	....	....	....	....
Van Wert	59	50	1	....	51,498	36	1,853,928	....	25	5	.50	23	....	34	44
Vinton	80	18	....	....	8,092	35	283,220	....	18	....	....	13	....	25	....
Warren	83	60	1	1	39,944	40	1,597,760	1	40	....	....	10	700	93	75
Washington ..	75	23	1	3	17,549	31	544,019	....	24	43	1.00	25	....	73	77
Wayne	80	34	....	....	35,122	28	983,416	....	22	34	.95	10	....	60	49
Williams	95	40	....	....	32,064	25	801,600	....	10	55	1.75	18	....	78	95
Wood	83	56	2	....	116,319	38	4,420,122	3	27	20	.90	42	....	88	78
Wyandot	73	49	2	....	37,012	31	1,147,372	....	27	21	1.38	10	....	81	86
Av. per cent.	80	43	1	0.66	....	34.7	....	4	Oct. 31	47	1.2	21	919	62	66
Totals	....	....	....	....	2,944,691	....	102,284,045	....		....	....	....	....	....	....



Map Showing Corn Area by Counties. Figures Indicate Acres in Corn.



Map Showing Corn Production by Counties. Figures Indicate Bushels of Shelled Corn.

TABLE SHOWING THE ANNUAL PRODUCTION AND PRICE OF WHEAT AND CORN FOR THE YEARS 1850 TO 1906, INCLUSIVE.

Year.	Bushels of wheat.	Average number of bushels per acre.	Price per Bushel.		Bushels of corn.	Average number of bushels per acre.	Price per Bushel.	
			Range.	Average.			Range.	Average.
1850	31,500,000	18	$0 70 to $1 10	$0 89	56,619,608	36.8	$0 24 to $0 51	$0 38
1851	25,309,225	15.2	58 to 78	69	61,271,382	36.7	30 to 94	38
1852	23,043,737	14.1	59 to 63	60	58,165,517	33.6	25 to 45	39
1853	17,118,311	12	60 to 85	73	73,436,070	40	37 to 55	42
1854	11,989,110	8	85 to 1 70	1 19	52,171,551	26	40 to 55	49
1855	19,569,320	13.81	1 10 to 2 00	1 54	87,587,434	39.7	55 to 80	67
1856	15,333,837	10.2	90 to 1 70	1 27	57,802,515	27.7	32 to 63	42
1857	25,397,614	14	1 00 to 1 60	1 18	82,555,186	36.6	48 to 80	59
1858	17,655,483	10.4	67 to 1 00	77	50,863,582	27.7	25 to 61	42
1859	13,317,967	7.2	90 to 1 70	1 15	68,780,846	29.5	50 to 90	72
1860	23,640,356	13.8	93 to 1 38	1 17	91,588,704	38.2	39 to 80	50
1861	20,055,424	11	65 to 1 12	93	74,858,878	33.5	28 to 50	34
1862	20,764,887	12	72 to 1 00	86	62,704,887	30	27 to 40	31
1863	20,452,410	11.36	82 to 1 30	1 04	54,614,617	27	35 to 70	53
1864	15,541,885	9.33	95 to 2 12	1 41	54,053,491	27	63 to 1 27	1 03
1865	13,234,139	9	1 25 to 2 07	1 78	68,053,668	35	56 to 1 29	77
1866	5,821,747	4.5	1 75 to 2 80	2 27	80,386,320	36.5	45 to 65	54
1867	13,350,721	11.51	1 95 to 3 50	2 79	63,875,064	29.8	59 to 98	79
1868	16,480,059	11.31	1 90 to 2 65	2 31	76,725,288	34.4	82 to 1 08	92
1869	26,499,729	15.37	1 15 to 1 98	1 57	62,443,346	28.4	57 to 1 10	73
1870	18,726,341	11.29	1 08 to 1 33	1 15	88,565,299	37.5	69 to 1 05	83
1871	22,274,378	13.27	1 10 to 1 55	1 27	98,363,060	36.7	50 to 79	56
1872	18,987,664	11.22	1 13 to 2 08	1 58	103,058,234	40.9	44 to 57	49
1873	21,974,385	12.61	1 30 to 1 80	1 56	84,049,328	35.1	39 to 50	42
1874	26,806,818	14.51	1 03 to 1 60	1 38	101,815,494	39.8	42 to 75	60
1875	17,867,967	9.22	1 03 to 1 75	1 16	97,825,024	34.1	58 to 87	72
1876	15,354,569	10.18	1 00 to 1 50	1 10	112,552,642	36.8	40 to 73	51
1877	27,306,566	15.63	1 08 to 2 15	1 41	101,884,305	32.5	40 to 57	46
1878	35,218,783	16.58	85 to 1 35	1 11	114,839,107	37.8	48 to 49	42
1879	41,052,120	17.78	85 to 1 15	96	96,908,800	34	31 to 45	37
1880	48,540,307	17.20	93 to 1 37	1 16	105,414,504	38.9	42 to 51	42
1881	38,102,633	13.8	88 to 1 39	1 10	78,712,796	31	40 to 87	49
1882	42,112,103	15.59	95 to 1 50	1 32	90,869,137	34	56 to 87	72
1883	27,169,738	10.67	95 to 1 17	1 05	64,001,618	24.2	44 to 76	54
1884	36,396,119	14.4	80 to 1 10	1 01	87,797,813	33.3	40 to 62	53

1885	24,183,430	9.8	72 to 1 09	89	112,192,744	39	37 to 59	47
1886	37,660,681	14	74 to 1 00	88	88,818,556	33.5	32 to 48	39
1887	28,400,000	10.4	71 to 89	80	83,118,838	30.5	34 to 55	40
1888	26,160,994	11.7	71 to 96	85	111,155,506	38.9	44 to 61	52
1889	31,663,448	14.6	73 to 1 15	93	87,838.192	32.3	30 to 49	37
1890	31,509,676	13.8	75 to 1 02	83	63,694,215	24.5	27 to 56	36
1891	45,063.480	17.5	82 to 1 16	99	86,500,000	33	49 to 77	60
1892	38,381,598	14.4	73 to 1 01	90	81,892,100	30.8	39 to 67	48
1893	43,121,599	17.2	52 to 93	64	77,229,446	25	37 to 45	42
1894	45,587,534	20	48 to 56	51	88,805,607	25	35 to 59	45
1895	28,759,647	11.9	53 to 90	66	102,447,445	33.9	24 to 56	41
1896	19,511,788	8.53	55 to 97	72	134,796,274	41	18 to 33	27
1897	36,718,686	16.15	72 to 1 00	88	103,004,970	34.34	22 to 34	28
1898	41,041,671	15.56	64 to 1 45	87	114,214,148	37.35	27 to 41	34
1899	41,469,703	14.02	68 to 77	72	115.138,669	36.74	29 to 40	36
1900	10,866,155	6	70 to 89	75	143,161,675	38	32¾ to 47	40
1901	31,150,373	14.57	64 to 90	77	92,368.811	25.74	39 to 74	52
1902	36,901,212	18.1	63 to 84	74	122,675.349	37.3	40 to 62	56
1903	29.074,367	14.4	70 to 93	78	92,820,349	29.1	41 to 53	45
1904	21,090,222	12.2	90 to 1 15	102	100,529,653	32.8	42 to 50	45
1905	32,462,786	17.3	75 to 1 14	93	108,538 592	37.8	39 to 54	46
1906	39,279,680	19.4	63 to 95	80	127,044,784	42.2	39 to 55	46
1907 (estimated)	32,203,181	15.4			102,284,045	34.7		

TABLE SHOWING THE AVERAGE PRODUCTION AND PRICE OF WHEAT AND CORN BY DECADES.

Decades.	Average bushels of wheat.	Average bushels per acre.	Range of price per bushel.	Average price per bushel.	Average bushels of corn.	Average bushels per acre.	Range of price per bushel.	Average price per bushel.
1850 to 1860	20,023,460	12.29	$0 58 to $2 00	$1 00	64.920,369	33.4	$0 24 to $0 90	$0 48
1860 to 1870	17,584,085	10.91	60 to 3 50	1 61	68,930,426	32	27 to 1 29	64
1870 to 1880	24,656,959	13.29	85 to 2 15	1 27	99,986,129	36.5	38 to 1 05	54
1880 to 1890	34,038,945	13.21	71 to 1 50	1 00	90,991,979	33.5	30 to 87	45
1890 to 1900	38,042,989	15.19	48 to 1 45	77	89,648,770	32	18 to 77	39

AVERAGE PRICES OF OTHER FARM PRODUCTS THAN WHEAT AND CORN IN THE LOCAL MARKETS OF OHIO FROM 1855 to 1907 INCLUSIVE.

	Barley.	Oats.	Rye.	Hay.	Potatoes.
	Per Bush.	Per Bush.	Per Bush.	Per Ton.	Per Bush.
1855	$1 35	$0 29½	$0 70	$14 71	....
1856	1 58	46	91	21 00	....
1857	58	36	58	13 46	....
1858	67	57	82	15 38	....
1859	76	43	86	17 73	....
1860	69	27	56	12 62	....
1861	60	30	48	11 85	....
1862	1 36	58	76	16 34	....
1863	1 51	78½	1 35	27 16	....
1864	1 28	52	1 15	26 00	....
1865	1 41	42	80	12 63	....
1866	1 53	57	1 28	19 76	....
1867	2 11	69	1 62	14 80	....
1868	2 37	64	1 28	16 42	....
1869	1 26	54	92	17 44	....
1870	1 00	46	91	18 45	....
1871	78	37	85	20 79	....
1872	87	36	76	22 18	....
1873	1 51	48	93	17 16	....
1874	1 41	59	1 06	20 98	....
1875	1 20	38	74	17 66	....
1876	90	37	74	11 67	....
1877	52	29	59	9 86	....
1878	1 00	27	54	10 79	....
1879	89	34	82	15 87	....
1880	98	38	1 04	16 36	....
1881	1 05	50	94	17 90	$1 07
1882	76	39	62	12 39	67
1883	76	34	62	11 63	46
1884	80	32	63	12 81	50
1885	86	30	63	12 16	48
1886	61	29	58	11 17	53
1887	81	33	62	14 79	88
1888	78	26	52	12 74	40
1889	57	27	50	10 56	52
1890	77	48	81	10 58	97
1891	70	33	85	11 25	45
1892	69	33	73	11 10	55
1893	64	32	55	12 55	74
1894	60	35	52	10 95	66
1895	56½	27	53	12 70	49
1896	36	20	36	12 83	28
1897	39	22	39	11 00	48
1898	47	27	51	8 65	57
1899	52	27	62	10 10	49
1900	51	25	59	13 95	43
1901	62	34	60	11 00	60
1902	57	37	54	10 50	65
1903	58	38	59	12 00	75
1904	59	37	60	11 50	80
1905	48	30	50	10 75	55
1906	56	32	56	12 00	44
1907	....	....	....	....	....

TABULAR STATEMENT EXHIBITING THE NUMBER OF HORSES, CATTLE, MULES, SHEEP AND HOGS RETURNED BY THE SEVERAL COUNTY AUDITORS FOR THE YEARS 1906 AND 1907.

Counties.	Number of Horses.		Number of Cattle.		Number of Mules.		Number of Sheep.		Number of Hogs.	
	1906	1907	1906	1907	1906	1907	1906	1907	1906	1907
Adams	4,863	4,802	9,900	9,197	299	318	6,343	7,072	7,488	9,890
Allen	9,594	9,494	16,496	15,732	153	134	18,199	20,580	23,123	31,441
Ashland	7,350	7,541	13,057	13,564	110	112	36,714	37,271	13,147	17,229
Ashtabula	9,323	9,138	29,290	27,369	49	48	7,206	7,700	3,521	4,314
Athens	4,705	4,634	9,933	16,125	77	81	41,611	40,480	2,245	3,074
Auglaize	9,117	8,948	17,237	16,369	151	162	7,224	8,506	23,192	29,906
Belmont	8,387	8,295	17,615	17,587	256	212	70,984	72,593	7,730	8,994
Brown	6,592	6,692	11,263	10,472	315	303	7,081	7,362	16,088	21,219
Butler	11,107	11,367	16,300	16,053	522	604	7,345	8,575	18,938	25,266
Carroll	4,020	4,128	11,626	11,248	73	97	52,171	52,501	6,333	7,859
Champaign	10,623	10,584	18,711	15,486	361	395	21,718	22,651	29,004	33,375
Clark	11,485	11,329	19,081	17,350	501	487	20,909	23,617	23,167	28,089
Clermont	7,352	6,983	11,089	11,008	550	536	3,542	3,734	11,112	14,540
Clinton	9,436	9,599	15,615	13,869	626	530	15,357	16,339	37,179	48,242
Columbiana	10,164	9,552	20,294	19,111	182	226	25,331	24,493	9,225	10,213
Coshocton	6,582	6,587	16,313	16,433	174	159	80,962	89,785	10,696	14,898
Crawford	8,835	8,832	17,247	15,906	138	165	45,676	48,769	28,265	27,878
Cuyahoga	18,563	18,641	14,713	13,487	107	114	4,302	4,657	1,996	2,140
Darke	17,375	17,835	25,104	23,931	387	402	4,649	5,444	34,942	41,585
Defiance	6,826	6,933	11,343	10,696	55	65	14,266	14,835	13,548	16,544
Delaware	7,695	8,081	17,522	17,265	230	163	43,583	46,509	14,334	20,658
Erie	5,616	5,849	7,831	7,218	22	20	10,370	10,654	5,857	6,873
Fairfield	10,222	10,203	21,590	20,381	208	185	14,517	15,014	28,556	35,563
Fayette	9,550	9,767	21,621	17,500	385	356	9,969	10,689	35,309	42,954
Franklin	15,329	14,956	20,845	19,777	401	370	8,795	10,201	20,840	23,883
Fulton	6,847	7,154	16,798	17,179	35	23	14,367	15,306	18,571	20,821
Gallia	4,543	4,514	9,400	8,960	153	158	11,493	12,493	3,755	4,760
Geauga	5,160	5,309	20,125	19,747	32	63	4,598	5,099	3,300	3,889
Greene	9,936	10,025	15,819	15,088	338	411	14,877	16,018	25,577	31,782
Guernsey	5,244	5,140	13,408	12,127	345	337	67,202	69,618	4,913	5,737
Hamilton	16,675	16,143	16,456	16,200	1,092	1,063	1,968	2,262	7,936	9,089
Hancock	10,364	9,933	22,696	20,187	63	68	36,567	37,222	28,980	37,324
Hardin	8,968	9,060	19,406	17,987	123	134	37,223	42,124	21,024	32,125
Harrison	4,998	4,800	10,591	10,182	94	118	102,736	107,365	4,487	5,277
Henry	7,391	7,478	13,568	12,759	72	74	6,460	7,007	14,849	18,134
Highland	8,371	8,632	20,213	17,648	383	458	16,025	17,959	30,939	39,282
Hocking	3,841	3,800	8,891	8,860	74	79	12,800	14,041	4,654	5,267
Holmes	7,150	6,874	16,754	15,726	64	62	26,569	26,727	14,833	18,752
Huron	8,545	8,437	13,763	12,615	76	84	52,775	52,159	10,148	13,726

Jackson	3,405	3,233	10,081	8,917	834	419	3,738	3,582	3,178	3,177
Jefferson	5,713	5,682	10,817	10.891	359	88	43,308	44,036	4,932	5.772
Knox	8,170	8,332	17,694	16,676	171	137	104,455	116,250	15,464	19.351
Lake	4.740	4,744	7,276	6,370	24	24	4,055	3,998	1,289	1.658
Lawrence	3,716	3,409	7,775	7,821	494	427	1,431	1,442	3,143	3.567
Licking	13,247	13,135	28.536	25,700	210	196	98.380	101,573	22,224	28,788
Logan	10,082	9,577	17,734	16,139	163	230	30.699	32,564	24,659	34,870
Lorain	9,846	9,853	21,823	20,613	26	100	16,206	15,893	6,412	8.089
Lucas	9.053	8,653	9,625	9,463	44	40	1,707	2,005	6.604	7,456
Madison	9,688	10,341	21,432	18,735	334	348	20,228	22,108	30,803	41,010
Mahoning	8,711	9,000	18,874	18,240	187	202	17,027	17,134	7,123	8.003
Marion	7,993	7,945	15,251	14,215	184	187	50,394	53,745	22,541	30.540
Medina	9,026	8,626	16,738	15,664	194	84	21,970	21,877	8,303	9.959
Meigs	4,280	4,009	8,956	8,078	243	243	24,172	25,064	1,810	2.413
Mercer	10.365	10,259	18,188	17,001	145	161	10.085	11.071	23,805	30.234
Miami	11,725	11,704	14,956	13,792	413	475	2,778	2,215	14,985	18.145
Monroe	5,042	4,637	12,023	11,617	54	46	10,451	10,431	4,904	5.637
Montgomery	16,007	16,154	19,381	18,867	373	440	2,227	2,915	20,038	23.895
Morgan	4.690	4,369	12,114	11,389	38	55	65,381	64,451	3,769	4.682
Morrow	7,713	7.911	14,520	3,038	96	99	67,090	70,085	9,184	13.556
Muskingum	9.032	9,004	22.181	21,700	215	254	86,791	91,237	8.729	10.578
Noble	4,556	4,118	14,381	13,365	50	54	50,839	51,018	5,079	5,649
Ottawa	5,363	5.437	8,542	7,843	46	32	5,641	5,386	5,112	6.118
Paulding	6,144	6.600	6.846	6,524	72	100	7.642	9,237	9,205	11.634
Perry	6.097	6,058	14,426	13,275	74	70	26,775	29.306	7,891	9.758
Pickaway	9,904	10,431	22.560	20,528	332	322	6,327	7,994	25,420	33.246
Pike	4.044	3,996	6.543	5,825	217	259	3,900	3.891	5.741	7.166
Portage	8,938	8.877	21,147	18,746	82	60	15,041	15,918	6.249	6.694
Preble	10,325	10.524	17.341	16,240	419	557	5,157	6.381	29,095	37.395
Putnam	9 688	9.417	17,892	16.239	104	93	11,328	13.579	28.216	34.823
Richland	9.064	9,248	17,049	17,369	157	194	39,422	41,917	17,181	19.378
Ross	9,085	10,514	21,241	19.570	95	203	8,754	9.567	23,852	32.532
Sandusky	8,413	9,166	13,739	13,559	36	51	13,685	15,357	17.322	19.666
Scioto	5,462	5,365	9,010	8,760	573	600	931	858	6.038	6.897
Seneca	10.071	10.241	18.545	17,442	158	147	38.999	37,507	28,890	33.693
Shelby	9,018	9.286	15.680	13,548	78	79	5,020	5,554	15.355	24.052
Stark	15,262	14,836	26.237	25,253	311	264	15,443	15,573	17,353	20.352
Summit	9.635	9,543	19.236	19,873	114	108	4,936	5,189	7,412	9.184
Trumbull	10.687	10,260	26,594	26.594	119	147	13,719	14,474	5.378	5.965
Tuscarawas	8,813	8,470	20.561	19.618	191	162	28,333	29,808	10.909	12.405
Union	8,452	8,282	15,748	14,305	103	131	37,411	39.447	24,029	34.615
Van Wert	8,729	8,964	12.925	11,846	191	177	11,082	11.650	22.747	27.842
Vinton	2,886	2,362	5,753	5,953	119	185	15,150	16.632	1,666	2.258
Warren	9,299	8,704	13,929	12.602	470	476	5,237	6.628	19.852	23.961
Washington	6,818	7,010	14,084	14,070	153	139	27,463	29,344	4.670	6.030
Wayne	12,220	11,514	23.769	22,050	339	296	19.534	18,429	19,692	23.763
Williams	7.238	7,350	14,732	15,286	76	96	25.324	25,743	18,039	23.086
Wood	11,265	11,025	18.335	16.880	98	89	11,951	12,814	26.475	30.086
Wyandot	8,006	7,902	14.699	12,926	187	171	63,589	65,830	23,543	28,682
Totals	746,470	744,119	1,407,070	1,319,414	19,141	18,893	2,185,600	2,294,138	1,296,111	1,620,723

Horses, 2,351 decrease; cattle, 87,656 decrease; mules, 248 decrease; sheep, 108,538 increase; hogs, 324,612 increase.

AGRICULTURAL STATISTICS.

GATHERED IN MAY, 1907, AND REPORTED TO THE SECRETARY OF AGRICULTURE BY COUNTY AUDITORS.

Counties.	Wheat.			Rye.			Buckwheat.	
	Acres sown for harvest 1906.	Bushels produced 1906.	Acres sown for harvest 1907.	Acres sown for 1906.	Bushels produced 1906.	Acres sown for 1907.	Acres sown 1906.	Bushels produced 1906.
Adams	18,218	195,150	16,770	346	1,535	271	....	....
Allen	24 362	416,343	20,543	949	14,677	1.023	4	32
Ashland	26.982	565.032	27.367	275	3.431	153	33	261
Ashtabula	6,174	106,717	6,643	1,061	15,977	867	5,053	93,080
Athens	6,732	89,599	7,274	10	89	24	41	484
Auglaize	35,359	735.251	27,884	572	7,671	392	16	180
Belmont	15,973	247,259	15.582	208	1,882	179	43	535
Brown	18.499	215,128	18.603	1,423	6,948	1,323	3	25
Butler	52,167	1,147.199	57,452	204	3.078	158	4	100
Carroll	12,667	220,743	12,972	93	1,203	77	26	405
Champaign	24,992	513.749	29,103	704	9,510	1,110	32	116
Clark	27,553	522,098	32.342	834	11,526	789	6	72
Clermont	13,964	208.195	15,112	1,220	8.804	1,177	4	35
Clinton	37,667	769.139	41,838	389	5.896	681	4	30
Columbiana	19.695	363,837	18,785	185	2,358	136	39	713
Coshocton	37,810	391,203	21,182	182	2,152	202	23	172
Crawford	26,609	569.645	28,243	68	1,080	100	11	116
Cuyahoga	7,677	160,613	6.619	513	10,732	315	6	43
Darke	53,166	1,217,299	57,644	638	9,885	842	5	49
Defiance	18,071	301,748	19,206	295	3,797	532	38	508
Delaware	14.900	260,729	16,754	604	7.269	486	13	154
Erie	15,563	353.895	15,538	380	6.378	318	177	3,107
Fairfield	39,790	773,091	42,728	94	992	36	....	....
Fayette	31,718	660,292	36,479	786	10,471	407	....	....
Franklin	28.373	584,232	32.570	521	6,333	434	9	72
Fulton	14,663	229,581	14,724	1,126	13,718	1,026	99	1,743
Gallia	12.490	141,456	12.059	71	577	112	7	50
Geauga	5,785	95,066	6,719	206	3,165	239	836	20,489
Greene	38,069	800,772	43,575	1,103	15,265	966	22	230
Guernsey	11,929	180.838	11,068	135	1,651	123	26	393
Hamilton	13,580	296,276	15,009	435	5,354	348	12	230
Hancock	39,317	726,245	42,821	442	6.954	526	7	370
Hardin	17,821	301,897	17.132	499	9.583	530	17	352
Harrison	10,001	163.943	9,589	23	303	46	2	35
Henry	24,251	465,149	26,468	1,182	21,458	1,578	22	226
Highland	38,142	566,981	44,307	236	1,793	234	5	....
Hocking	10,909	122,113	7,031	40	262	54	63	821

Holmes	21,988	425,285	22,345	173	2,292	225	21	184
Huron	31,630	825,564	33.588	119	2,230	76	31	667
Jackson	7,003	78,966	6,592	65	326	21	108	1,620
Jefferson	10.837	189,302	10,326	80	784	77	34	542
Knox	26,130	422,070	26,480	667	5.349	625	....	....
Lake	3,407	68,415	3,394	740	9,517	756	557	11,813
Lawrence	3,138	31.847	2,437	89	308	36	47	530
Licking	30,830	501,242	30,421	894	12,024	783	100	754
Logan	20.789	428,958	23,436	2,066	30,815	1,425	25	229
Lorain	20,024	494,292	21,050	378	7,394	214	....	10
Lucas	8,470	141,287	7,201	1,626	25,610	1,332	251	4,860
Madison	13,195	247,978	22,215	434	4,581	405	2	....
Mahoning	13,479	227.790	14,111	201	2,423	137	236	3,614
Marion	17,245	341,625	18,524	200	3,118	185	....	....
Medina	21,555	435,684	21,869	557	9,893	602	26	530
Meigs	11,435	164.146	10,047	71	303	20	18	241
Mercer	38,061	887,215	38,352	378	6,434	555	14	149
Miami	38,081	962.924	41,748	100	1.718	140	....	....
Monroe	16,331	198,024	15,142	129	1,659	128	236	2,408
Montgomery	38,066	788.469	40,061	366	4,871	586	1	20
Morgan	11,204	184,265	9,969	92	1,231	24	31	455
Morrow	16,804	299,521	17,842	266	3.736	288	4	30
Muskingum	21,898	382.934	21,598	264	2,535	234	8	175
Noble	11.926	174,367	11,535	76	625	61	9	156
Ottawa	14,557	300,638	13,081	430	10,300	460	....	....
Paulding	15,164	313,569	13.645	2,467	48,382	1,715	39	482
Perry	14.372	278.424	15,398	67	861	48	479	7,045
Pickaway	51,867	980.728	54,226	286	2,040	196	1	16
Pike	14,119	198.010	15,994	67	665	71	279	3,583
Portage	16.732	311,303	17,992	259	3,161	171	415	8,327
Preble	41,632	1,075,414	45,080	304	5.230	371	....	....
Putnam	39,982	831,022	36,009	982	19,629	742	15	235
Richland	32,970	673,544	33,419	289	3,917	255	8	88
Ross	41,745	763.752	45,399	203	1,224	255	106	1,363
Sandusky	31,347	729,257	27,736	270	5,057	350	88	1,723
Scioto	14,246	218,898	14,076	34	454	61	557	10,221
Seneca	52,090	1,286,689	58,632	159	3,192	204	12	100
Shelby	31,261	586,556	36,678	170	1.855	356	6	55
Stark	41,900	941,182	43,408	217	3,879	210	32	538
Summit	22,109	484,191	22,190	313	5,691	223	108	2,043
Trumbull	7.081	102,472	11,433	223	3,421	265	1,032	17,477
Tuscarawas	23,492	423,472	23,492	248	3,788	269	30	390
Union	13,339	202,783	18,142	1.104	14,545	1,733	1	15
Van Wert	27.452	557,124	21,177	1,850	37,622	1,604	4	90
Vinton	5.006	55,225	5,140	11	80	24	117	1,500
Warren	26,962	613,144	30,660	538	7.919	609	....	....
Washington	20,020	295,570	17,729	93	836	102	103	1,244
Wayne	44.618	1,094,255	46,023	294	5.313	68	39	720
Williams	18.407	235,451	19,421	566	7,525	806	17	249
Wood	29,613	578,324	25,751	888	15,584	896	35	473
Wyandot	25,537	568.010	29,468	52	560	151	12	96
Total	2,022,784	39,279,680	2,087,417	41,367	586,269	38,965	12,002	212.288

AGRICULTURAL STATISTICS—Continued.

Counties.	Oats.			Winter Barley.			Spring Barley.		
	Acres sown 1906.	Bushels produced 1906.	Acres (estimated) sown for 1907.	Acres sown 1906.	Bushels produced 1906.	Acres (estimated) sown for 1907.	Acres sown 1906.	Bushels produced 1906.	Acres sown for 1907.
Adams	3,375	48,438	3,184	......	......	......	......	......	......
Allen	15,502	630,632	20,414	......	......	17	164	4,466	194
Ashland	19,714	633.377	19.458	15	633	7	3	90	1
Ashtabula	21,993	684.932	22,488	......	......	2	13	233	7
Athens	2,157	36.488	1,634	......	......	......	......	......	......
Auglaize	20,476	762,172	33,259	......	......	......	14	200	43
Belmont	9,449	216,483	9,071	429	18,055	415	......	......	11
Brown	5,843	81,243	6,258	12	100	7	25	800	6
Butler	8,864	211,672	10,187	225	10,490	547	104	1,400	60
Carroll	12.268	343,717	11,988	......	......	......	10	280	......
Champaign	25,356	768,787	30,761	17	150	36	29	340	119
Clark	12,553	343,454	13,451	......	......	......	105	1,060	204
Clermont	10,765	178,154	9,864	......	......	......	......	......	......
Clinton	9,937	161,479	5,271	12	360	......	79	1,970	42
Columbiana	19,918	600,678	17,567	4	......	......	3	30	4
Coshocton	10,959	274,720	11.173	......	......	......	2	30	......
Crawford	23.387	868,707	24,328	......	......	4	56	1,346	62
Cuyahoga	12,133	433.796	11,330	2	......	......	3	50	10
Darke	34,454	1,170,064	44,316	15	600	14	30	953	37
Defiance	25,501	962,944	30,024	2	110	13	547	17,370	885
Delaware	16,054	409,393	13,344	13	60	15	25	125	9
Erie	13,630	534,215	13,330	4	140	13	139	3,760	222
Fairfield	3,808	105,899	3,012	......	......	......	2	35	2
Fayette	7,574	220.020	7,018	......	......	15	16	405	19
Franklin	16.785	449,013	14,005	......	......	......	......	......	10
Fulton	27,100	1,014,936	27,543	11	348	38	1,141	34,613	1,993
Gallia	2,788	36,980	2,384	......	......	......	6	60	......
Geauga	13,252	473,719	14,292	12	224	9	26	537	54
Greene	7,780	219,224	7,743	31	890	17	......	......	3
Guernsey	6,311	146,758	5,720	36	105	17	5	50	5
Hamilton	2.976	67,366	2,997	40	1,022	26	......	......	110
Hancock	18,288	663.618	21,529	6	130	24	135	3,221	287
Hardin	15,148	612,350	17,432	......	......	......	11	385	96
Harrison	7,228	206,179	7,504	......	......	......	16	280	20
Henry	28,513	1,128,440	34,294	8	200	17	2,616	82,938	3,631
Highland	4,340	79,921	3,780	19	440	35	4	......	3
Hocking	2,084	39,355	1,637	......	......	......	......	......	......
Holmes	17,069	514.683	17,432	......	......	......	......	......	......

Huron	28.374	932,684	29,552	11	510	8	28	510	38
Jackson	1,542	24,080	1,268	......	......	......	......	......	......
Jefferson	10,097	304,451	9,280	......	150	......	7	148	......
Knox	11,414	324,212	11,199	......	......	......	......	......	......
Lake	7,958	266,169	8,007	3	......	4	31	925	53
Lawrence	4,002	41,428	3,046	......	......	......	......	......	......
Licking	13,464	352.637	11,328	2	20	4	5	40	......
Logan	19,521	684,455	26,760	20	260	30	121	3.370	236
Lorain	21,197	832,496	21,347	2	80	......	93	2,394	62
Lucas	16,212	598,821	16,865	26	721	32	1,016	30,829	1,136
Madison	29,283	823,710	30,829	150	327	64	55	817	153
Mahoning	15,157	474,232	14,147	......	......	......	......	......	3
Marion	23,619	872,279	28,715	2	30	......	19	530	9
Medina	20,750	754,072	20,878	16	985	33	13	561	23
Meigs	3.015	58,855	2,367	......	......	......	......	......	1
Mercer	31,120	1.137,793	47,609	33	1,137	56	129	3,793	382
Miami	24,568	851,702	27,754	......	......	......	6	140	15
Monroe	8,470	148,637	7,691	......	......	......	......	......	......
Montgomery	13.172	367,250	15,378	28	1,300	73	......	......	......
Morgan	4,802	63.915	2,462	......	......	6	7	119	......
Morrow	16,358	537,036	14,754	......	......	......	......	......	......
Muskingum	7,288	179,774	6,577	8	170	......	2	14	......
Noble	3,399	72,331	3,646	......	......	......	2	40	......
Ottawa	14,543	582,246	16,948	24	340	4	1,173	37,210	1,069
Paulding	35,157	1,610,414	45,734	17	400	11	553	19,840	257
Perry	2,648	66.286	1,902	1	20	......	6	60	......
Pickaway	5.420	145,018	4,324	......	......	......	......	......	......
Pike	3,395	50,482	2,927	......	......	......	18	400	......
Portage	19,508	638,231	19,354	3	40	......	20	421	11
Preble	9,294	245,392	10,316	8	250	14	34	650	55
Putnam	18,966	799,413	26,237	16	565	65	941	24,923	1,190
Richland	25,098	862,824	25,627	23	902	22	6	150	6
Ross	3,117	55,491	2,205	18	190	5	6	......	......
Sandusky	23,312	878,368	26,921	43	440	13	137	5,143	149
Scioto	3,895	61,660	3,437	......	......	......	......	......	......
Seneca	25,407	865,725	28,575	14	370	47	59	1,838	191
Shelby	28,524	984,227	39,366	......	......	......	11	375	26
Stark	30,675	1,107,919	31,526	1	25	4	3	55	2
Summit	19,033	716,528	19,062	8	98	9	45	1,673	69
Trumbull	18.998	518,587	18.256	......	......	......	16	550	14
Tuscarawas	18,467	468,915	17,972	8	135	1	......	......	......
Union	20,742	591,349	20,238	76	16	......	71	883	26
Van Wert	23,570	1,010,954	35,024	11	340	41	882	28,247	1,151
Vinton	2,124	29,441	1,538	......	......	......	......	......	......
Warren	9,264	225,157	8,236	59	2,350	77	......	......	3
Washington	8,320	161,534	6.955	......	......	......	4	106	2
Wayne	29,954	1,115,355	30,948	3	60	5	20	665	18
Williams	28,114	851,449	25,711	20	571	63	1,528	52,978	2,228
Wood	49,924	1,932,485	59,438	27	430	7	618	17,778	1,034
Wyandot	16,664	567,307	15,257	20	661	......	31	599	......
Total	1,344,247	44,179,782	1,456,515	1,614	47,950	1,986	13.045	395,801	17,761

AGRICULTURAL STATISTICS—Continued.

Counties.	Corn.			Ensilage Corn.		Broom Corn.		Sugar Corn.	
	Acres planted 1906.	Bushels (shelled) produced 1906	Acres planted (estimated) for crop of 1907.	Acres planted 1906.	Acres planted (estimated) for crop of 1907.	Acres planted 1906.	Pounds broom brush produced 1906.	Acres planted 1906.	Tons produced 1906.
Adams	31,926	935,319	29,487	6	......	7	1,635	9	29
Allen	36,917	1.801,800	35,326	10	10	......	......	47	270
Ashland	23,929	1,083,702	23,262	82	95	1	400	......	......
Ashtabula	13,300	473,994	13,440	3,385	3.293	......	......	7	70
Athens	10,530	376,482	10,270	56	61	......	......	5	10
Auglaize	45,284	2,081,420	44,700	35	47	1	500	9	57
Belmont	19,576	829,900	17,067	327	311	......	......	46	144
Brown	38,154	1,155,904	40,285	......	......	6	2,300	23	43
Butler	52,134	2,416.230	54,099	38	107	10	4,000	142	194
Carroll	12,171	520,235	11,390	64	51	......	......	......	......
Champaign	61,568	2,318.982	60,368	37	39	5	4.000	583	1,317
Clark	49.879	2,013,090	55,128	150	178	......	......	65	212
Clermont	35,514	1,039,256	34,217	18	19	......	......	336	471
Clinton	60.452	2,736,412	60,968	118	95	3	20	950	2,609
Columbiana	16,907	759,798	14,518	1,192	1,126	......	......	119	325
Coshocton	24,470	959,608	21,670	11	2	......	......	17	46
Crawford	36,152	1,522,517	34,420	......	......	......	......	12	21
Cuyahoga	8,443	344.375	7,543	1,684	1,651	......	......	53	192
Darke	84,873	4,029,188	82,632	15	......	6	3,700	68	136
Defiance	31,445	1,533,195	31,432	1	......	3	2,100	2	......
Delaware	39,190	1,566,275	37,040	435	378	......	......	33	72
Erie	15,707	693,908	14,945	78	64	......	......	12	24
Fairfield	50,156	2,350,012	46,385	12	10	......	......	65	178
Fayette	55.782	2,415,335	58,368	......	......	......	......	440	1,256
Franklin	56,458	2,475,590	54,299	399	302	......	......	235	677
Fulton	35.698	1,717,160	35,472	89	92	3	1,560	216	594
Gallia	20,450	675,766	28,374	12	9	......	......	11	9
Geauga	8,425	348,319	8,565	2,955	3,903	......	......	15	113
Greene	58,599	2,496,490	58.987	155	220	1	800	209	630
Guernsey	16,125	662.665	14,381	92	90	......	......	......	......
Hamilton	16,454	660,361	15,495	137	136	......	......	1,241	2,299
Hancock	54,036	2,372,581	52.813	9	9	......	......	7	......
Hardin	36,745	1,744,353	33,455	11	11	......	......	155	258
Harrison	11,705	527,852	10,284	69	69	......	......	5	......
Henry	61,576	2.816,366	58,042	......	......	......	......	9	50
Highland	50,498	1,713,722	52,963	......	......	......	......	3	8
Hocking	22,695	435,459	11,985	13	90	......	......	5	12

Holmes	23,047	975,687	20,867	2	2				
Huron	32,499	1,266,722	30,894	116	107	1	500	41	328
Jackson	10,990	294,271	8,674						
Jefferson	10,617	461,447	9,068	185	175			28	606
Knox	31,558	81,620	30,857						
Lake	5,739	249,722	5,882	499	527	1		128	305
Lawrence	13,152	310,210	11,641					68	374
Licking	48,921	1,905,736	45,075	418	380	2	1,000	16	90
Logan	48,116	2,287,064	49,079	50	46			3	3
Lorain	20,192	927,040	18,904	1,006	1,056			47	107
Lucas	22,871	1,012,940	21,922	813	12,944			224	1,729
Madison	71,858	2,991,910	77,271	22	20			464	1,267
Mahoning	13,253	577,794	12,536	1,065	921			12	166
Marion	44,433	1,949,699	43,375	81	50	10	5,000	38	115
Medina	20,033	890,193	19,073	530	598				
Meigs	11,882	370,571	10.850			9	4,500	7	8
Mercer	46,805	2,154,719	48,483	9	16	2	150	28	80
Miami	53,843	2,483,490	53,997	3	3	1	800	142	66
Monroe	16,654	578,345	15,949	19	19			14	14
Montgomery	43,268	1,768,769	44,172	30	19	18	10,000	177	537
Morgan	18,400	603,548	12,213					4	4
Morrow	24.707	1,183,180	22,986	43	40			92	266
Muskingum	26,796	1,158,392	23,996	78	52			48	141
Noble	15,274	621.728	12,904					1	1
Ottawa	23,133	1,211,237	22,483	10	10			22	215
Paulding	46,355	2,434,210	45,207						
Perry	32,791	606,138	29,394	10	13	1	408		
Pickaway	66,197	3,056,315	66,794	30	35			2,372	7,327
Pike	25,812	848,732	25,207						
Portage	14,343	586,452	13,657	1,854	1,886	12		3	8
Preble	53,195	2,607,133	52,359	4	18			21	53
Putnam	59,985	3,027,680	58,017	351	4,378	20	12,000	730	5,491
Richland	30,020	1,372,344	28,640	135	139			3	14
Ross	64,698	3,075,678	59,794	20	79			645	3,356
Sandusky	40,455	1,673,076	39.991		4			30	123
Scioto	21.513	697,136	20,690			12	3,000	15	79
Seneca	50,567	2,224,279	49,555	15	15	1	1,000	13	14
Shelby	45,320	2,126.887	46,053	42	44	14	8,200		
Stark	31,284	1,394,005	29,168	315	333			27	85
Summit	17,373	803,266	16.284	2,288	2,225	7	50	27	176
Trumbull	13,365	543,637	13,212	2,282	2,262			28	189
Tuscarawas	20,167	816,109	18,336	66	43			3	842
Union	48,748	2,109,584	47,507					5	
Van Wert	51,465	2,805,200	51,498					162	865
Vinton	10,530	272,202	8,092						
Warren	40.386	1,608,645	39,944	52	63			1,827	6,736
Washington	19,134	663,319	17,549	81	84			64	3,269
Wayne	37,003	1,690,505	35.122	61	67			1	2
Williams	32,683	1,566,271	32,064	4	4				
Wood	97,552	3,831,656	116,319						
Wyandot	38,336	1,680,670	37,012	62	650			1	50
Total	3,011.241	127,044,784	2,944,691	24,346	41,795	157	67,623	12,735	47,427

AGRICULTURAL STATISTICS—Continued.

Counties.	Tomatoes.		Peas.		Irish Potatoes.			Sweet Potatoes.	
	Acres planted 1906.	Bushels produced 1906.	Acres planted 1906.	Pounds produced 1906.	Acres planted 1906.	Bushels produced 1906.	Acres (estimated) for crop of 1907.	Acres planted 1906.	Bushels produced 1906.
Adams	11	690	4	3,010	340	21,568	229	18	1,425
Allen	4	600	11	4.000	778	66,441	518	...	...
Ashland	85	10,725	...	...	1,235	141.591	1.171	...	...
Ashtabula	90	23,440	2	752	3,832	435.815	3,588	...	...
Athens	...	...	...	...	512	44,530	616	...	30
Auglaize	3	425	2	1,625	909	67,988	828	1	45
Belmont	93	18,164	4	4,920	1,006	111.574	932	...	...
Brown	135	15,756	...	...	463	35,190	418	4	650
Butler	71	6,920	...	...	1,298	116,107	1,413	8	855
Carroll	...	...	21	2,650	758	86,753	648	...	...
Champaign	103	5,790	...	...	393	43,645	429	...	10
Clark	12	2,098	...	...	828	82.191	885	3	292
Clermont	895	185,140	5	...	1,041	76,440	719	29	2,260
Clinton	57	7,170	2	...	306	33.596	265	...	232
Columbiana	64	15,110	6	7,000	2,254	281.376	2.233	...	...
Coshocton	...	200	5	5,400	1.183	143.738	1,086	2	145
Crawford	5	1,300	17	4,100	1,521	172.067	1,524	...	...
Cuyahoga	90	30,875	2	...	6,688	675,134	6,272	...	...
Darke	17	3.202	1	1,500	854	74,437	790	1	608
Defiance	11	2,800	...	...	730	81,315	692	1	60
Delaware	5	1,250	6	5,400	629	64.521	563	1	50
Erie	20	1,850	1	1,000	3,362	403.075	3,109	...	...
Fairfield	34	5,985	...	...	820	92,933	742	...	...
Fayette	...	...	...	...	9	535	5	...	...
Franklin	286	31,946	17	4,807	2,155	208,759	2,287	6	1,000
Fulton	41	7,876	30	7,000	946	108.998	971	600	5
Gallia	...	...	12	2.050	255	27,635	248	1	75
Geauga	...	...	2	2,200	3,242	374,696	3,206	4	380
Greene	89	15,185	3	5,050	877	80,510	780	4	320
Guernsey	...	...	...	...	614	62.976	519	...	...
Hamilton	824	136,464	8	9,000	4,209	483,697	4,042	129	5,635
Hancock	...	...	...	...	879	80,904	613	...	2
Hardin	...	...	...	...	1,338	104.832	1,472	...	...
Harrison	...	...	...	...	176	30.181	127	...	...
Henry	...	...	...	...	654	73,737	634	...	...
Highland	16	1,175	1	50	195	14.824	136	1	100
Hocking	13	991	...	...	583	59,831	558	2	331
Holmes	...	...	...	...	566	72,149	520	...	...

Huron	10	1,155	109	130,560	1,483	143,076	1,366	......	......
Jackson	......	......	......	......	278	14,120	123	......	......
Jefferson	21	4,470	5	870	837	96,931	665	......	......
Knox	......	......	......	......	505	43,378	471	......	......
Lake	34	7,504	2	......	2,188	186,942	2,075	42	520
Lawrence	36	4,075	16	13,000	383	36,520	309	115	24,224
Licking	8	1,425	3	1,540	1,431	175,259	1,312	25	36
Logan	32	1,978	1	500	583	51,314	472	2	109
Lorain	49	13,885	2	5,000	2,976	319,405	3,385	......	......
Lucas	339	76,660	26	6,500	2,931	324,558	3,083	4	330
Madison	3	150	1	......	385	25,510	238	......	20
Mahoning	20	4,801	6	560	4,381	301,545	2,414	......	......
Marion	4	1,000	3	3,600	875	87,981	796	1	50
Medina	......	......	......	......	3,679	435,084	3,508	......	......
Meigs	57	6,685	127	1,746	628	65,465	498	3	245
Mercer	29	5,850	11	13,700	1,194	61,563	1,153	......	......
Miami	6	450	......	......	960	94,104	1,024	6	1,153
Monroe	16	3,475	2	500	1,311	128,699	1,255	1	20
Montgomery	105	19,005	5	840	1,016	88,180	1,079	3	508
Morgan	......	......	......	......	432	46,498	307	......	40
Morrow	3	1,050	8	6,000	956	128,417	1,047	......	......
Muskingum	47	9,975	13	23,700	1,088	124,174	989	9	216
Noble	1	75	......	......	532	68,787	424	......	......
Ottawa	197	41,565	......	......	681	48,186	593	3	10
Paulding	40	13,770	......	......	331	28,830	298	......	......
Perry	9	1,185	......	......	754	64,879	686	13	580
Pickaway	89	8,095	48	53,450	336	34,020	284	......	......
Pike	22	1,687	......	......	674	74,931	700	......	......
Portage	......	......	......	......	7,751	940,496	7,115	......	......
Preble	156	19,393	......	......	315	26,345	642	7	801
Putnam	......	......	......	......	983	91,375	939	......	......
Richland	......	......	10	850	1,972	214,969	1,975	......	......
Ross	46	9,145	285	566,915	1,114	97,527	835	3	630
Sandusky	18	1,400	......	......	2,316	250,988	2,350	......	......
Scioto	17	1,640	2	2,810	1,452	125,605	1,540	15	1,410
Seneca	2	325	1	1,025	1,831	209,684	1,840	......	......
Shelby	......	......	......	......	597	47,314	611	......	......
Stark	59	18,265	......	1,221	4,145	586,243	4,456	1	206
Summit	22	5,890	5	13,700	4,285	556,923	4,137	......	......
Trumbull	2	2,950	1	500	3,604	387,126	3,394	......	......
Tuscarawas	31	10,815	4	8,900	1,938	216,746	1,851	2	165
Union	3	400	......	......	383	25,393	343	......	......
Van Wert	24	5,100	......	......	761	63,603	754	......	......
Vinton	......	......	......	......	269	24,765	171	1	25
Warren	68	7,915	......	......	332	15,537	177	3	107
Washington	234	44,240	18	1,884	1,779	191,621	1,651	82	8,725
Wayne	3	489	......	1,280	6,217	885,520	6,575	......	230
Williams	2	400	92	196,480	794	76,502	682	2	250
Wood	55	17,540	5	15,120	1,014	94,342	950	......	......
Wyandot	1	80	......	......	585	51,915	512	......	......
Total	4,994	909,044	973	1,144,305	126,683	13,615,184	119,842	1,158	55,120

AGRICULTURAL STATISTICS—Continued.

Counties.	Onions.		Meadow.		Clover.			
	Acres planted 1906.	Bushels produced 1906.	Acres in grass (other than clover) 1906.	Tons of hay produced 1906.	Acres grown 1906.	Tons of hay produced 1906.	Bushels of seed produced 1906.	Acres plowed under for manure 1906.
Adams	2	324	15,109	15,901	2,692	1.618	583	121
Allen	3	450	25,079	29,422	3,800	4,395	2.549	82
Ashland	1	400	29,547	36.012	9,599	11,484	1,764	168
Ashtabula	108	32,873	51,409	64,663	481	680	56	29
Athens	....	50	19.580	20,962	276	377	9	32
Auglaize	6	1,517	17.835	17,288	5.541	4,432	2,748	434
Belmont	5	525	36.782	37,294	1,146	1,226	60	29
Brown	....	....	16.585	11,540	664	258	230	144
Butler	17	2,210	16.776	15,583	14,355	5,815	2.081	7,264
Carroll	....	....	30.331	30,084	3,487	3.832	1,273	....
Champaign	....	....	13.606	14,726	9.057	6,185	2,340	1,901
Clark	....	39	19.368	20,357	4,105	3.407	483	757
Clermont	....	....	22.911	15,822	1,370	1,285	151	647
Clinton	....	15	17.862	17,049	4,811	3,073	702	1,901
Columbiana	2	800	41,491	47,145	3,773	4,905	383	5
Coshocton	1	245	34.427	37,351	6.306	7,649	2,573	81
Crawford	2	350	27,044	30.550	10,565	11,197	2,693	109
Cuyahoga	27	4,550	22,613	26,528	594	808	....	27
Darke	1	200	20.754	17,144	24,042	11,572	4,514	10,842
Defiance	1	100	19,511	16,368	6,200	3,688	5,865	666
Delaware	4	875	43,321	48,894	2,190	2,406	474	93
Erie	15	5,595	10,962	9.836	3,751	3.270	130	262
Fairfield	1	205	37,074	43,500	5,134	5,610	1,542	101
Fayette	5	71	8.484	8,617	3,134	2.130	599	1,518
Franklin	3	460	35,549	37,997	4,446	2,391	213	567
Fulton	6	2,305	20,733	17,307	9.054	9,636	5,118	67
Gallia	....	....	15.901	12,952	518	428	....	80
Geauga	26	8,357	25,211	32.828	1,063	1,716	7	27
Greene	....	....	16,974	16,873	6.784	3,381	991	2,349
Guernsey	2	300	34,887	34.560	473	545	34	....
Hamilton	39	5,295	10,751	11.523	2,470	2,201	172	531
Hancock	24	2,285	30,609	29,507	7.653	6,502	2,803	167
Hardin	1,504	378,435	19,085	24,638	3,472	3,942	1,501	402
Harrison	....	....	34,944	38,260	10,324	914	158	....
Henry	4	1,300	16,301	13,448	6,225	3.138	6.929	1,160
Highland	....	....	20,173	17.649	3,240	2,165	1,424	63
Hocking	1	120	16,292	14.764	857	750	198	80

Holmes	....	....	18,095	23,846	10,455	14,827	4,571	....
Huron	104	11,465	29,294	31,508	16,083	17,160	1,534	160
Jackson	....	....	14,545	10,100	65	32	....	....
Jefferson	5	1,100	29,531	31,156	2,446	2,924	558	23
Knox	....	....	35,228	45,778	6,317	6,973	1,982	....
Lake	708	241,142	13,092	13,664	234	376	3	92
Lawrence	186	824	5,480	4,451	319	168	5	81
Licking	25	7,653	57,091	64,346	5,286	5,977	1,426	82
Logan	38	5,900	17,573	19,306	9,957	7,978	3,436	1,108
Lorain	12	3,140	35,367	42,854	7,754	9,795	70	118
Lucas	388	96,843	12,544	13,337	2,879	2,729	2,166	58
Madison	1	....	12,268	10,738	8,100	4,679	1,245	5,429
Mahoning	3	150	33,152	42,278	1,676	2,371	99	27
Marion	3	555	19,831	23,778	7,994	8,930	3,678	1,424
Medina	18	1,945	27,393	33,042	9,386	11,942	405	....
Meigs	....	16	19,197	18,266	343	409	1	182
Mercer	....	....	16,767	16,970	11,184	7,857	7,482	344
Miami	1	175	11,774	11,759	8,238	4,730	982	2,327
Monroe	5	1,554	27,862	28,600	509	604	192	....
Montgomery	4	590	18,356	19,545	7,792	4,197	1,491	1,947
Morgan	....	....	27,107	29,332	964	1,210	93	36
Morrow	1	400	28.995	41,812	6,611	8,236	2,577	....
Muskingum	4	711	44,527	46,195	2,473	2,708	244	29
Noble	....	....	28,711	29,909	891	1,032	204	4
Ottawa	....	....	15,251	16,260	3,405	3,716	1,785	5
Paulding	....	....	18,069	17,768	4,732	2,854	4,780	1,082
Perry	2	165	23,168	25,051	4,961	6,135	2,040	....
Pickaway	....	....	25,976	15,018	5,826	3,657	1,670	1,139
Pike	21	4,150	8,533	8,165	2,356	1,376	667	878
Portage	552	27,735	29,129	35,771	3,853	5,315	477	58
Preble	....	10	8.243	8,858	22,723	7,476	2,143	16,145
Putnam	26	5,995	20,595	21,282	6,619	6,302	7,003	3,969
Richland	3	60	24,755	30,966	15,943	18,534	2,903	121
Ross	97	18,868	15,397	13,868	3,873	1,483	769	2,344
Sandusky	11	45	19,499	17,588	5,911	4,894	1,554	668
Scioto	7	655	9,364	7,981	806	703	20	133
Seneca	85	3,440	31,392	29,186	13,847	11,479	4,209	472
Shelby	16	1,312	12,560	10,783	7,130	3,403	2,092	1,011
Stark	11	2,584	44,456	54,180	8,960	11,947	1,850	121
Summit	33	9,875	22,635	30,405	4,949	6,843	414	156
Trumbull	22	2,755	48,150	58,803	318	466	13	17
Tuscarawas	9	1,070	40,783	45,418	3,980	5,164	2,128	33
Union	1	300	25,598	28,537	7,800	7,024	1,172	224
Van Wert	....	....	25,613	24,567	4,371	3,414	2,923	1,057
Vinton	....	....	14,977	10,983	193	136	75	....
Warren	22	81	16,543	16,016	4,841	2,371	190	2,199
Washington	....	15,349	33.567	17,154	993	1,199	228	15
Wayne	225	105,818	33,186	46,902	17,234	24,725	2,690	183
Williams	21	4,725	26,186	26,885	9,511	7,847	6,483	96
Wood	5	2,680	25,936	20,501	7,891	5,115	5,229	1,479
Wyandot	45	9,774	25,579	27,990	5,368	5,074	2,434	514
Total	4,530	1,041,860	2,124,791	2,254,398	489,991	425,507	145,735	80,296

AGRICULTURAL STATISTICS—Continued.

Counties.	Alfalfa.		Flax.			Tobacco.		Milk
	Acres grown in 1906.	Tons of hay in 1906	Acres sown in 1906.	Bushels of seed 1906.	Pounds of fibre 1906.	Acres planted 1906.	Pounds produced 1906.	Gallons sold for family use 1906.
Adams	8	41	4	32	......	2,958	3,173,664	60,611
Allen	65	102	......	......	......	......	......	322,857
Ashland	3	6	572	9,160	346,600	......	......	191,700
Ashtabula	1	4	......	......	......	......	204	17,508.737
Athens	332	901	......	......	......	......	......	123,778
Auglaize	135	261	1	3	......	8	9.050	112,245
Belmont	49	79	......	......	......	736	1,020.054	1,258.262
Brown	36	68	......	......	......	4.445	4.533.217	126,500
Butler	416	1,032	5	20	......	1,719	1,548,480	883,992
Carroll	4	......	......	......	......	......	......	106,345
Champaign	1,095	2,755	......	......	......	56	61.100	444,845
Clark	315	720	......	......	......	184	187,476	1,685.367
Clermont	564	1,116	......	......	......	2,293	2,177,557	1,238,701
Clinton	145	445	......	......	......	9	7,000	126.838
Columbiana	2	......	......	......	......	......	......	2,406,265
Coshocton	62	231	......	......	......	......	100	73,099
Crawford	7	18	......	......	......	......	......	156.459
Cuyahoga	1	......	......	......	......	......	......	3,202,492
Darke	158	250	......	......	......	14,908	15,370,410	152,675
Defiance	25	69	1	25	......	......	......	145,395
Delaware	234	525	......	......	......	......	......	278,765
Erie	120	308	......	......	......	......	......	850,475
Fairfield	27	96	......	......	......	......	......	176,325
Fayette	425	1,341	......	......	......	......	......	79,375
Franklin	387	1,001	......	......	......	......	......	2,393.111
Fulton	63	171	......	......	......	3	3.000	1,380.485
Gallia	51	107	......	......	......	484	400,208	86.413
Geauga	2	2	2	30	......	......	......	5,903.507
Greene	234	446	......	......	......	558	539,825	405.883
Guernsey	43	89	......	......	......	179	219.965	168,188
Hamilton	1,244	3,175	......	......	......	206	217,070	1,287,580
Hancock	22	22	1	12	......	......	......	229,495
Hardin	94	253	......	......	......	......	......	76,385
Harrison	23	63	......	......	......	......	......	97.317
Henry	8	21	......	6	......	......	......	71,720
Highland	135	370	2	20	......	16	19,885	76,898
Hocking	100	370	......	......	......	......	......	56,301

Holmes	4	10						75,550
Huron	6	19	252	3,105	147,200			291,545
Jackson								35,375
Jefferson	17	33						517,130
Knox								113,647
Lake	32	29				2	2,500	1,023,124
Lawrence	4	10				77	65,140	86,924
Licking	185	536		12	8			1,063,811
Logan	1,209	2,568				5	3,600	212,451
Lorain	11	16	42	445	16,000			3,141,721
Lucas	318	821	40					1,964,039
Madison	525	1,148						216,566
Mahoning								2,359,711
Marion	28	64						238,800
Medina	7	22	1	16		116	259,320	876,155
Meigs	27	59						2,340
Mercer	58	186				46	36,400	33,865
Miami	114	253				6,268	7,344,086	328,255
Monroe	3	5				773	951,790	38,915
Montgomery	377	798	4	6		19,148	17,964,094	1,826,722
Morgan	90	309				2	600	21,125
Morrow	29	98						177,474
Muskingum	71	156						420,208
Noble	32	67	2	15		1,068	1,349,040	6,030
Ottawa	237	629						56,903
Paulding	22	37	1	17		1	900	33,105
Perry	8	12				1	160	54,280
Pickaway	26	44						35,215
Pike	10	7				23	20,255	22,962
Portage	1	3						1,312,145
Preble	330	679				7,986	8,310,407	340,405
Putnam	9	22	2	30	80			20,450
Richland	7	25	22	180	16,000			573,320
Ross	500	1,250	8			10	9,800	127,603
Sandusky	39	142						142,856
Scioto	57	105				406	313,410	118,093
Seneca	103	287						44,600
Shelby	74	121				118	108,100	551,691
Stark	769	951						1,820,742
Summit	12	3						4,327,750
Trumbull	1	5						3,610,361
Tuscarawas	9	32						639,371
Union	172	438	7	6		2	2,000	515,081
Van Wert	10	32						56,790
Vinton								8,920
Warren	334	827	7	15		4,979	4,129,975	744.931
Washington	69	302				8	9,086	295,205
Wayne	7	24	23	312	20,500	249	337,950	465.619
Williams	124	396						416,830
Wood	254	485						556,060
Wyandot	59	119	3	3				80,950
Total	13,025	29,642	1,002	13,470	546,388	70,050	70,706,878	75,988,007

AGRICULTURAL STATISTICS—Continued.

Counties.	Butter.		Cheese.		Eggs.	
	Pounds made in home dairies 1906.	Pounds made in factories and creameries 1906.	Pounds made in home dairies 1906.	Pounds made in factories and creameries 1906.	Number dozen produced 1906.	Number dozen shipped beyond state 1906.
Adams	430,391	100	......	......	1,021,397	1,550
Allen	616,981	......	12,160	......	1,120,650	......
Ashland	581,958	57,650	......	55,450	964,440	16
Ashtabula	554,387	169,324	42,500	2,436,422	905,177	629
Athens	322,551	......	......	19	657,915	700
Auglaize	452,805	621,539	33,100	......	1,103,210	45,600
Belmont	670,819	8,500	4,800	......	794,185	7,395
Brown	547,735	800	......	......	1,002,738	......
Butler	765,926	1,150	16,950	......	870,575	500
Carroll	548,717	126,200	2,400	......	616,467	28,900
Champaign	432,029	190,695	......	110,000	765,511	7,425
Clark	552,874	20,159	2,000	......	613,849	60,000
Clermont	654,312	7,057	200	......	948,990	......
Clinton	351,205	40,285	......	......	840,368	......
Columbiana	568,988	402,244	36,200	714,746	979,168	5,600
Coshocton	531,045	3,150	73,000	......	900,424	10,100
Crawford	550,500	1,550	75	......	1,032,032	......
Cuyahoga	464,428	14,150	......	9,200	706,253	......
Darke	935,379	485,490	50	75,000	1,940,415	1,143,400
Defiance	450,500	36,405	......	......	995,304	75
Delaware	323,331	515,147	......	83,844	970,980	115,040
Erie	263,284	100	14,540	162,913	378,018	......
Fairfield	706,079	22,110	250	......	996,257	......
Fayette	133,792	......	......	......	474,885	......
Franklin	811,466	157,055	200	......	1,019,841	......
Fulton	568,802	136,590	5,900	1,307,832	1,271,010	100
Gallia	431,945	520	......	......	820,891	200
Geauga	87,099	498,485	150	1,116,783	1,231,505	......
Greene	484,395	......	3,000	......	769,847	......
Guernsey	488,487	16,650	......	......	596,066	3,210
Hamilton	595,687	300	39,100	......	360,895	49,015
Hancock	806,758	500	200	......	1,002,307	200
Hardin	371,389	5,840	......	......	694,601	950
Harrison	512,459	171,644	......	......	517,103	2,010
Henry	726,720	13,700	335	......	1,352,835	......
Highland	436,542	31,020	......	......	1,070,515	......
Hocking	298,135	......	......	......	383,675	......

Holmes	507,715	32,600	39,130	492,350	891,430	
Huron	618.210	25,170	15,550	49,900	953.906	
Jackson	231,239	300			295,035	
Jefferson	554,925	29,555			463,895	250
Knox	612,691				882,112	
Lake	359,492	20,070	4,025	10,500	290,152	100
Lawrence	291,873				311,021	4,265
Licking	845,643	309,706			2,195.283	2,120
Logan	448,308	348,220			919,887	575
Lorain	508,981	140,198	9,627	658,251	901,646	300
Lucas	435,935	3,500			444,268	
Madison	260,252	85,688			656.299	38.050
Mahoning	767,370	268,438	46.400	136,999	638.379	
Marion	429.405	10,490	1,000		815.905	100
Medina	507,965	466,365	11,150	164,116	818,312	90
Meigs	399,045	45,845	5,510	200	712,858	11
Mercer	460,329	27,100	525		1,309.711	55.000
Miami	673.005		3,260		761,418	
Monroe	570,505	17,305	387,565	129,620	978,395	25,050
Montgomery	1,067,376	2,600	14,200	1,150	1,045,461	
Morgan	480.484	84			929,795	1,200
Morrow	662.167	14.400			943,299	
Muskingum	772.256	510,324			958,372	3,100
Noble	540,490	8,500			904.890	
Ottawa	336.270		100		519,011	
Paulding	620,345		50		848,405	
Perry	411,468				620.218	
Pickaway	377,460				742,977	
Pike	187,188	3.892	1.220	2,540	467.622	1.248
Portage	564,516	204.779	302.107	531,261	745.775	3.550
Preble	650,700	106,894	1,550		919.279	6.200
Putnam	542,406	25	20,370		1,273 950	37,650
Richland	709,346	56,408	10.700		872,886	
Ross	328,762				617.101	
Sandusky	464.484	71,725			758.106	200
Scioto	216,810		805		363.616	
Seneca	829,715	75.905			1,130.995	20
Shelby	460.318	45.690			744.694	
Stark	971.436	67,070	7,450	517,715	1,116.539	25
Summit	439.594	233,125	2,200	478.578	638.074	
Trumbull	723.857	186.698	21,612	911.443	991.448	8.471
Tuscarawas	551.827	36.578	857,015	533,726	632.870	
Union	447.420	1,300			1,022.997	
Van Wert	419.223				1,098.923	12
Vinton	259.320				355.208	
Warren	391,974	136,417			698,682	730
Washington	622,680	71.815	740		1,035.843	1.404
Wayne	1,118.483	79.510	41.510	187.090	1,314.031	15,840
Williams	449.814	63.880	47,900	180,522	1,240.989	
Wood	672.312	4,910			1,210,302	
Wyandot	399.816	124,500	50	61,150	657.672	66.250
Total	46,203,105	8.296,688	2,140,431	13.259,346	82,849.942	1.755.981

AGRICULTURAL STATISTICS—Continued.

Counties.	Sorghum.			Maple Products.			Bees.	Honey.
	Acres planted 1906.	Pounds of sugar 1906.	Gallons of syrup 1906.	Number trees from which sugar or syrup was made 1907.	Pounds of sugar 1907.	Gallons of syrup 1907.	Number of hives 1906.	Pounds of honey 1906.
Adams	11	25	458	2,945	20	698	633	6,905
Allen	7	....	1,048	11,534	34	1,494	374	4,620
Ashland	....	....	20	65,671	3,492	7,425	144	1.700
Ashtabula	....	....	....	229,232	12,711	33,344	707	28,344
Athens	2	....	200	1,050	100	285	307	3,688
Auglaize	177	422	3,590	8,251	....	1,846	248	1,621
Belmont	45	11	1,170	1,290	30	291	393	2,655
Brown	7	80	170	215	....	40	352	3.773
Butler	4	....	18	1,299	....	307	378	6,725
Carroll	15	....	97	124	3	58	104	1,545
Champaign	9	....	176	14,206	370	3,705	232	1,791
Clark	10	30	843	16	....	14	271	2,665
Clermont	25	....	829	775	42	183	338	8,823
Clinton	11	15	270	34,111	275	8,357	277	3,020
Columbiana	1	....	56	25.385	10	3,598	166	1,282
Coshocton	3	48	254	663	....	166	313	3,628
Crawford	6	315	238	17,453	30	3,054	218	2,664
Cuyahoga	....	....	....	57,427	1,893	9,197	133	1.495
Darke	21	....	2,205	5,932	27	1,443	1,067	8.778
Defiance	29	28	2,775	5,774	....	778	886	17,220
Delaware	1	....	169	22,809	30	3,919	283	3,317
Erie	....	....	....	9,585	....	1,492	94	496
Fairfield	....	....	....	3,018	150	1,037	116	1,202
Fayette	2	....	....	....	....	....	....	....
Franklin	2	....	26	2.333	150	8,125	403	2.691
Fulton	8	....	1,068	1,680	....	191	316	6,875
Gallia	59	....	2,675	535	50	74	421	5,583
Geauga	1	....	....	607,507	7,687	118,223	191	5.585
Greene	8	42	186	19,610	....	6,633	441	3,072
Guernsey	26	....	2,059	102	....	15	227	1.495
Hamilton	....	....	....	135	14	275	273	8 940
Hancock	....	....	481	14,654	....	2,469	1.014	10.875
Hardin	8	....	288	5,580	....	756	276	2,860
Harrison	1	1	221	835	2	166	274	1.270
Henry	18	....	2,859	910	25	165	197	3,920
Highland	7	....	179	3,915	182	1,492	508	4,843
Hocking	9	....	459	50	....	25	47	370

Holmes	....	....	13	2,036	85	459	183	4,630
Huron	8	36	112	50,550	440	6,007	348	4,825
Jackson	4	....	142	....	....	....	243	2,741
Jefferson	....	....	26	1,010	....	213	124	1,188
Knox	....	....	....	26,854	1,246	5,538	206	3,336
Lake	300	....	88	33,825	2,956	5,876	240	1,980
Lawrence	234	8	20,824	....	....	....	425	6,888
Licking	4	....	153	41,690	3,425	6,610	389	2,339
Logan	15	....	135	78,852	15,520	16,372	315	2,457
Lorain	11	75	7	79,988	2,461	8,763	93	609
Lucas	....	....	....	200	....	15	151	2,675
Madison	1	....	60	....	....	....	345	2,336
Mahoning	....	....	....	90,200	56	11,527	141	2,013
Marion	....	....	....	1,590	20	289	110	711
Medina	....	300	....	179,467	6,558	26,450	224	1,305
Meigs	....	....	841	25	....	10	180	2,186
Mercer	154	114	8,086	....	....	6	113	487
Miami	13	20	611	5,863	8	1,583	181	1,927
Monroe	88	531	3,629	100	75	15	427	3,638
Montgomery	10	30	626	660	....	216	271	4,262
Morgan	82	....	239	89	30	34	237	1,538
Morrow	....	2	200	59,290	....	8,705	....	....
Muskingum	....	....	....	100	....	25	308	1,975
Noble	19	100	1,498	130	....	45	386	1,490
Ottawa	....	....	....	....	....	....	124	1,940
Paulding	5	....	519	250	....	56	310	3,635
Perry	8	....	786	8,127	60	2,658	903	7,193
Pickaway	....	....	37	730	140	210	90	520
Pike	39	40	1,884	262	40	95	364	4,202
Portage	....	....	....	336,127	6,721	52,093	172	3,465
Preble	26	....	1,838	4,398	40	994	754	7,375
Putnam	22	....	2,810	1,603	....	345	448	7,205
Richland	....	....	6	44.934	255	5,373	361	3,385
Ross	5	181	....	3,626	36	1,174	308	6.161
Sandusky	13	....	457	2,011	6	351	57	2,602
Scioto	51	100	3,150	13	25	6	514	6,377
Seneca	....	....	....	17,896	84	2,233	298	4,785
Shelby	91	22	3,989	2,356	....	609	153	752
Stark	1	....	148	21,196	....	3,107	429	5.381
Summit	....	....	15	43.775	2,820	7,010	493	7,275
Trumbull	400	....	....	207.243	978	33,834	334	7,025
Tuscarawas	10	208	680	1,227	100	183	339	2,657
Union	5	....	160	19,152	1,275	3,440	872	4,306
Van Wert	7	....	413	100	56	67	245	4,990
Vinton	4	....	300	....	....	....	299	1.944
Warren	....	....	....	2,970	50	1,027	241	2,163
Washington	13	330	153	....	....	....	395	3,963
Wayne	4	....	190	10,863	47	1,540	984	6,389
Williams	6	20	763	24,308	15	2,370	390	8,810
Wood	2	....	24	1,460	....	249	128	3,415
Wyandot	9	....	920	7,953	50	1,363	146	1,375
Total	2,197	3,134	81.619	2,597,110	73,005	440,485	28,413	353,162

AGRICULTURAL STATISTICS—Continued.

Counties.	Commercial Fertilizers.			Grapes and Wine.			
	Pounds used during 1906.	Cost of fertilizers used during 1906.	Estimated pounds to be used during 1907.	Acres (new) vineyard planted 1906.	Whole number of acres in vineyard 1906.	Pounds of grapes gathered in 1906.	Gallons of wine pressed in 1906.
Adams	4,037,723	$43,402	3,799,210	3	1	1,100	....
Allen	582,600	5,409	164,700	1	....	39,500	382
Ashland	3,879,550	48.066	3,125,150	1	1	1,400	6
Ashtabula	5,889.479	59,630	4,344,242	....	207	603,850	....
Athens	1,149,415	10,556	669,230	....	....	....	....
Auglaize	1,008,850	9,438	247,100	2	5	3,100	1,195
Belmont	1,810,741	17,119	772,250	18	479	71,475	3,245
Brown	2,664.350	26,349	1,729,450	1	51	1,200	150
Butler	1,795,550	14.748	872,400	....	.5	13,800	340
Carroll	1,932.819	21,214	1,165,875	....	....	....	....
Champaign	3,079,912	27,166	718,600	....	1	4,000	250
Clark	3,694,675	22,922	964,800	....	1	2,000	....
Clermont	2,054,068	20.775	1,202.750	14	60	29,200	1,785
Clinton	5.016,290	45,208	3,010.305	....	....	....	....
Columbiana	3,978,372	42,425	2,730,380	....	....	100	....
Coshocton	2,056,550	19,042	1,134,200	....	....	....	....
Crawford	3,184,580	29,268	2.434.400	....	6	19,958	813
Cuyahoga	4,552,980	49,682	3,163,500	45	1,247	951,827	98,666
Darke	3,322,065	49,483	1,330,010	2	....	3,930	194
Defiance	316,380	3,367	201,200	1	4	16,370	437
Delaware	1,933,250	15,099	990,450	....	....	....	....
Erie	2.277,503	25,232	1,639,310	20	1,128	2,802,627	50,275
Fairfield	5,348,200	52,643	3,971,000	1	40	6,000	....
Fayette	3,174,261	39,661	1,583,300	....	....	....	....
Franklin	1,859,775	16,686	830,577	....	8	7,700	75
Fulton	538,200	6,055	456,300	....	....	....	275
Gallia	1,707,500	16,596	1.151,715	3	75	2,650	15
Geauga	3,460,965	37,584	3,478,034	6,000	90	46,600	300
Greene	3.448,750	30,319	2,550,900	....	1	6,000	....
Guernsey	1,688,530	15,237	958,267	....	....	....	....
Hamilton	403,800	4,738	283,150	53	35	16,727	2,052
Hancock	1.000,500	10,257	127,545	....	1	22,200	287
Hardin	624,900	6,272	1,804,925	....	1	5,600	260
Harrison	768,600	15,503	185,200	....	....	....	....
Henry	212,600	9,047	193.025	....	12	3,600	861
Highland	6,039,940	77,448	3,266,580	2	....	....	50
Hocking	1,746,705	15,288	1,435,155	....	....	....	....

Holmes	2,872,000	25,274	2,212,600	...	...	...	...
Huron	6,848,330	79,224	4,496,810	...	...	...	297
Jackson	2,434,500	24,083	1,057,770	...	...	...	...
Jefferson	1,408,310	13.023	650,250	1	1	1,500	300
Knox	3,105.940	24,440	250.250	...	...	...	...
Lake	2,283,450	23,089	1,685,500	107	10,638	2,102.792	3,530
Lawrence	547,800	2,453	26,750	3	...	3,500	...
Licking	3,744,580	35,574	2,206,966	...	1	10,000	...
Logan	1,229.450	12,042	421,010	2	...	1,100	...
Lorain	5,002,200	49.879	3,812,320	15	881	2,947.480	7,848
Lucas	471,963	5,500	381,900	101	187	407,000	101,481
Madison	510,800	4,368	1,054,300	...	...	400	20
Mahoning	4,410,034	41,943	3,650,430	...	...	...	...
Marion	878,135	8,176	517,600	...	...	200	...
Medina	7,533,000	71,602	5.991,100	1	17	31,450	...
Meigs	1.785,250	18,416	714,650	...	2	400	...
Mercer	1,477,500	12,251	409,700	30	7	12,800	1,402
Miami	3,215,175	28.995	1,662,950	...	1	3,400	2,532
Monroe	2,475.300	19,338	1,742.720	...	29	...	4,890
Montgomery	4,494,260	42,810	3,894.292	5	14	15,700	250
Morgan	2,393.212	21,627	1,268,150	2	...	2,120	8
Morrow	3.232,802	25.265	2,110.567	...	...	...	...
Muskingum	3.685.120	33.543	2,208,620	...	...	...	...
Noble	1,385,165	12,550	578,912	...	...	...	...
Ottawa	5.000	56	1,000	19	2,025	4,937,435	30,422
Paulding	15,020	166	12,000	...	3	14,700	187
Perry	4,221,395	39,895	3,256,735	...	3	6,400	22
Pickaway	4,744.300	35,437	2,618,850	...	...	...	...
Pike	2,911,670	24.702	1,601,395	...	1	...	63
Portage	4,939.950	50,789	3.887.980	...	...	...	...
Preble	7,196.930	62,243	4,955.750	...	...	7,750	...
Putnam	23,600	228	11,800	...	21	6,230	1,473
Richland	4,163.560	37,308	2,670,825	7	5	4,700	...
Ross	5,339,010	60.037	2,531.000	2	6	8,420	250
Sandusky	1,572,901	18.599	875,761	3	6	13,300	3,400
Scioto	2,716,485	34,098	2,056,543	...	...	150	10
Seneca	6,711,278	60,747	4,447.084	...	1	500	20
Shelby	1,927.070	18,076	549.920	...	1	...	260
Stark	5.893.830	62,754	4,529.990	...	...	350	295
Summit	4,192.760	44.201	3.068.950	5	...	11,500	...
Trumbull	4,056,280	38.739	3,189,325	8	...	9,000	...
Tuscarawas	1,931,076	18,106	1,029.180	...	4	2,500	164
Union	1,116,400	10,020	430.000	...	...	1,825	52
Van Wert	52.400	601	11,700	...	4	11,180	586
Vinton	919,590	9,305	657,800	...	...	...	...
Warren	2,541.450	27,142	1,371,060	1	2,500	25	...
Washington	4,126.767	42,803	2,778,164	...	...	...	...
Wayne	8,105,288	87.230	7,128,860	1	...	1,840	13
Williams	967.525	19,663	177,850	1	2	8,450	214
Wood	693,420	13,112	320,000	6	39	93.000	1,435
Wyandot	2,011,950	16,286	540,450	6	250	2,200	192
Total	242,707,109	$2,426,752	156,401,274	6,493	20,108	15,363,811	323,529

AGRICULTURAL STATISTICS—Continued.

Counties.	Apples.		Peaches.		Pears.		Cherries.		Plums.		Other Small Fruit	
	Acres occupied 1906.	Bushels produced 1906.	Acres occupied 1906.	Bushels produced 1906.	Acres occupied 1906.	Bushels produced 1906.	Acres occupied 1906.	Bushels produced 1906.	Acres occupied 1906.	Bushels produced 1906.	Acres occupied 1906.	Bushels produced 1906.
Adams	1,832	69,001	124	664	15	463	4	328	7	315	3	17
Allen	1,611	72,535	2	260	3	13	4	178	1	7	15	610
Ashland	2,436	157,995	62	4,538	110	7,453	6	841	....	100	4	758
Ashtabula	3,332	396,454	125	2,456	26	1,266	6	290	14	182	64	3,543
Athens	2,959	96,795	236	804	18	350	12	48	5	87	21	910
Auglaize	1,629	78,614	3	185	4	452	6	321	5	60	41	785
Belmont	4,528	196,620	131	372	71	3,000	49	1,893	50	1,850	168	10,512
Brown	1,630	49.124	13	35	1	190	4	40	....	....	....	....
Butler	640	14.757	82	486	34	1,133	20	216	5	5	3	200
Carroll	3,427	142,640	32	606	1	127	4	237	3	145	31	1,522
Champaign	1,179	86,736	26	1,472	8	1,029	6	609	1	120	32	1,284
Clark	1,253	52,060	24	803	18	1,064	47	3,765	30	2,075	113	5,947
Clermont	2,565	55,879	395	761	358	7,964	29	616	53	130	300	10,427
Clinton	1,249	38,268	52	151	262	128	68	332	10	115	23	238
Columbiana	6.176	272,922	84	946	17	444	39	1,615	20	217	356	24,417
Coshocton	4,552	248,588	749	4,933	83	936	152	67	4	35	36	2,416
Crawford	3,306	298.878	9	450	....	217	2	488	2	73	27	845
Cuyahoga	2,575	141,970	41	455	105	4,168	23	861	41	523	738	28,936
Darke	3,109	140,503	20	1,291	3	1,587	11	2,314	29	238	9	1,033
Defiance	2,286	127,621	82	550	2	100	5	208	11	45	50	1,832
Delaware	2,319	133,908	14	257	2	108	9	71	3	14	8	890
Erie	1,579	94,511	681	26,021	51	1,354	37	1,379	144	648	206	4,526
Fairfield	2,379	107,224	30	320	....	....	3	127	2	150	216	10,947
Fayette	169	11,555	6	....	....	....	5	160	....	....	9	....
Franklin	2,336	98,014	6	370	26	685	15	533	30	273	48	1,155
Fulton	2,671	111,980	58	716	4	190	8	242	9	95	19	476
Gallia	5,321	170,843	257	1,355	46	431	17	490	28	360	126	3,511
Geauga	2,140	222,250	16	739	78	3,943	2	257	12	139	4	387
Greene	1,144	49,202	48	1,124	10	812	20	494	3	30	26	1,350
Guernsey	3,943	196,616	245	757	16	714	4	93	21	305	75	3,514
Hamilton	890	24,248	247	2,358	351	19,565	56	1,593	16	390	407	20,915
Hancock	3,827	107,005	32	1,782	8	657	7	494	2	243	8	423
Hardin	1,454	65,660	4	654	3	180	6	118	3	31	6	580
Harrison	3,159	135,732	89	923	6	933	1	446	6	285	2	340
Henry	2,618	58,069	34	434	1	45	3	43	....	....	11	195
Highland	2,589	68,261	40	235	....	....	10	40	....	20	1	118
Hocking	2,195	40,276	95	397	63	82	20	180	....	14	9	381

Holmes	2,973	193,770	57	2,440	1	20	7	270	2	75	8	370
Huron	2,922	179,386	76	2,395	12	122	12	261	5	80	26	1,848
Jackson	1,840	48,571	93	416	2	440	....	....	....	....	....	....
Jefferson	3,183	146.087	50	1,833	12	505	14	405	14	1,495	22	1,045
Knox	2,893	51,273	125	730	....	....	....	....	....	....	37	493
Lake	1,385	127,898	374	2,922	178	4,611	17	524	30	250	45	2,330
Lawrence	4,067	191,668	170	883	51	553	9	394	19	598	189	4,295
Licking	3,849	221,458	231	1,526	28	868	8	898	7	171	28	2,260
Logan	1,644	83,796	11	1,000	5	265	2	195	18	55	47	1,518
Lorain	2,629	156,050	187	2,259	52	1,348	8	165	34	222	123	6,130
Lucas	1,942	70.694	259	7,907	75	5,388	92	3,508	36	700	365	15,334
Madison	2,241	36,661	1	6	1	....	5	35	3	....	13	130
Mahoning	3,718	608,172	90	853	46	1,911	11	495	17	1,368	58	4.870
Marion	1,574	97.279	9	55	2	95	2	110	2	2	48	2,040
Medina	2,743	196,290	13	529	6	529	1	576	12	913	36	382
Meigs	2,582	74,273	122	165	42	647	9	290	7	280	86	1,895
Mercer	2,664	60,503	67	265	11	221	1	304	3	99	....	183
Miami	795	43,438	68	1,550	13	499	69	2,283	19	45	74	4,910
Monroe	4.010	132,010	29	291	5	71	16	474	18	881	29	3,619
Montgomery	1,823	83,672	47	447	130	4,291	46	2,776	6	127	173	9,759
Morgan	2,985	85,436	106	249	8	235	8	504	124	100	2	69
Morrow	2,510	216,717	5	135	2	120	1	16	1	20	....	....
Muskingum	4,136	148,885	506	1,511	53	809	....	....	....	....	14	265
Noble	3,048	108,217	50	342	6	159	9	580	12	188	16	819
Ottawa	1,729	51,102	5,959	367,021	95	3,830	8	530	157	5,747	40	501
Paulding	1,247	47,784	1	20	5	42	2	32	....	....	1	101
Perry	3,427	72.212	40	352	9	457	36	315	86	473	50	2,253
Pickaway	666	13,874	17	....	6	12	13	75	8	2	16	355
Pike	2,101	41,146	142	2,268	13	366	11	220	3	242	15	300
Portage	3,136	407.710	12	165	8	363	9	623	6	420	18	1,389
Preble	1,544	74,960	31	2,576	14	1,195	51	2,042	26	81	36	1,783
Putnam	2,437	85,096	91	2,765	6	299	6	336	9	131	4	506
Richland	4.140	238,549	142	5,437	76	2,052	22	1,666	20	398	63	4,379
Ross	2,437	62,199	413	191	136	245	20	452	25	23	87	3,795
Sandusky	2,401	93,599	124	3,536	16	233	72	3,507	5	119	87	2,835
Scioto	1,519	35,042	98	795	1	50	4	....	....	....	54	2,731
Seneca	3,211	142,078	55	1,906	13	90	10	575	3	76	22	782
Shelby	1,542	65,730	7	295	13	539	1	35	....	3	6	210
Stark	5,661	448,775	102	1,542	2	1,542	17	2,824	8	539	56	4.501
Summit	3,162	335,141	33	1,689	....	470	....	1,194	....	335	73	8,096
Trumbull	3,957	518.628	84	405	15	309	12	186	3	44	51	3,092
Tuscarawas	5,232	205,207	173	4,149	3	762	....	830	5	498	59	3,676
Union	2,000	98,480	21	117	3	105	8	139	4	98	2	90
Van Wert	2,505	66,982	9	443	5	302	13	493	3	80	7	80
Vinton	1,941	37,250	373	580	....	....	2	66	....	....	3	75
Warren	937	17,794	107	496	26	546	20	313	3	79	12	931
Washington	7,499	160.597	85	1,312	5	178	39	334	14	200	777	4.826
Wayne	4.821	321,979	21	714	5	772	18	2,463	10	101	41	2,724
Williams	3,834	143,977	25	888	1	891	1	123	2	78	7	305
Wood	3,675	67,065	52	1,093	144	810	22	1,920	17	400	22	980
Wyandot	1,890	97,755	5	737	....	246	1	296	1	95	3	175
Total	235,814	11,746,220	15,162	492,861	3,173	102,196	1,485	58,679	1,377	27,250	6,266	261,975

AGRICULTURAL STATISTICS—Continued.

Counties.	Lands Owned in 1906.					Horses.	Cattle.			
	Number of acres cultivated.	Number of acres pasture.	Number of acres woodland.	Number of acres lying waste.	Total number of acres owned.	Number owned in April, 1907.	Beef cattle owned in April, 1907.	Milch cows owned in April, 1907.	All other cattle owned in April, 1907.	Total number owned in April, 1907.
Adams	63,545	95.898	60,802	23,176	243,421	4,909	202	4,359	5,024	9,585
Allen	90,984	40,015	26,120	1,703	158,822	6,956	435	7,580	5,481	13,496
Ashland	93,310	79,675	32,429	5,071	210,485	5,924	345	6.705	4,657	11,707
Ashtabula	124.237	123,630	39,216	6,720	293,803	7,024	185	19,875	4,632	24,692
Athens	41,482	103,568	19,763	9,233	174,046	2,940	488	3,539	3,689	7,716
Auglaize	119,085	52,803	30,738	3,214	205,840	7,104	500	7,769	6,586	14,855
Belmont	91,044	124,759	24,371	13,972	254,146	5,094	661	7,711	5,923	14,295
Brown	78,977	113,368	18,626	11,887	222,858	5,043	362	4,982	3,413	8,757
Butler	158.432	41,919	18,131	13,246	231,728	8.546	611	9,150	4,793	14,554
Carroll	40,804	89,874	19,214	6,507	156,399	3.592	394	6,319	3,636	10,349
Champaign	148,912	54,679	18,610	1,602	223.803	9,489	1,111	7,213	6,383	14,707
Clark	115,386	39,493	12.607	2,289	169,775	8,974	1,235	7,718	6,110	15.063
Clermont	70,585	118,938	20,970	16,964	227,457	5,953	120	7,790	1,974	9,884
Clinton	112.793	78,870	20,769	3,831	216,263	8.647	988	5,897	5,710	12,595
Columbiana	79,486	133.192	29.968	5,430	248,076	6,585	246	13,173	3,517	16,936
Coshocton	58,060	185,801	42,618	8,155	294,634	5,303	817	6.589	7,172	14,578
Crawford	111,929	75,306	31,419	2,230	220,884	7,124	810	7,327	6,768	14,905
Cuyahoga	55,246	68,002	11,773	8,179	143,200	5,430	39	9,774	880	10,693
Darke	265.491	39,962	38,170	5,919	349,542	15,861	257	13,924	8.622	22,803
Defiance	116,150	20,211	32,212	5,009	173,582	5,728	285	6,418	3,373	10.076
Delaware	72,903	142,205	21,168	1,690	237,966	6,961	571	9,339	6,782	16,692
Erie	70,770	26,075	7,162	5,298	109,305	3,819	65	3,946	1,860	5,871
Fairfield	138,685	82,436	27.805	9,149	258,075	9,069	1,473	7,799	9,743	19.015
Fayette	93.968	85,327	9,022	1,542	189,859	6.449	2,992	3,530	7,637	14.159
Franklin	108,860	100,081	10,252	6,074	225,267	7,979	974	10,852	3,929	15,755
Fulton	106,907	56,358	23,824	1,217	188,306	6,222	459	10,783	3,505	14,747
Gallia	58,995	124,579	20.472	19,533	223.579	4,149	28	4,474	4,478	8.980
Geauga	39,363	120,446	35,977	1,899	197,685	4,429	134	13,062	4,787	17,983
Greene	116.517	48,721	20,468	7,180	192,886	7,970	1,334	7,178	5,654	14,166
Guernsey	74,773	132,877	30,465	2,715	240,830	3,953	648	5,677	4,701	11,026
Hamilton	37,758	25.341	4,009	4,378	71,486	3,422	291	4,718	439	5.448
Hancock	128,857	54,185	32,284	2,172	217,498	7,500	419	8,825	8,272	17,516
Hardin	83,399	63,162	17,551	514	164,626	4,984	578	4,604	5,832	11,014
Harrison	32,300	149.928	22,837	2,336	207,401	4,429	543	5,494	3,453	9.490
Henry	147,634	13,025	24,190	3,311	188,160	6,845	204	7,378	4,173	11,755
Highland	98,428	152,627	28,042	7,579	286,676	7,388	558	5.836	8,518	14,912
Hocking	24,777	86,950	31,947	6,685	150,359	2,856	918	3,146	4,702	8,766

Holmes	78,167	81,911	37,178	18,854	216.110	5,490	499	7,741	5,538	13,778
Huron	150,023	80,456	36,474	5,945	272,898	7,081	150	7,396	4,268	11,814
Jackson	38,893	84,858	13,653	9,830	147,234	2,081	165	2,713	5,049	7,927
Jefferson	73,114	94,202	26,147	10,713	204,176	3,981	342	5,949	3,178	9,469
Knox	104,880	117,612	35,791	1,154	259,437	6,411	701	7,873	8,111	16,685
Lake	44,251	20,515	16,860	6,468	88,094	4,756	165	5,117	1,616	6,898
Lawrence	36,106	47,822	22,074	33,593	139,595	2,144	193	2,929	3,141	6,263
Licking	163.314	145,655	34,362	4,041	347,372	10.306	871	12,127	10,717	23,715
Logan	108,027	73,527	28,867	5,334	215,755	7,854	611	7,396	5,844	13,851
Lorain	81,482	118,858	20,256	3,011	223,607	7,028	186	13,004	4,240	17,430
Lucas	68,554	25,037	8,649	4,561	106,801	4,429	324	6,824	837	7,985
Madison	91,871	83,461	6,728	767	182,827	8,194	1,385	5,231	10,220	16,836
Mahoning	98,036	75.012	25,023	2,105	200,176	5,985	492	11,636	4,255	16,383
Marion	77,173	78,273	13,823	1,239	170,508	6,147	1,521	5,463	5,344	12,328
Medina	116,633	64,035	27,045	2,856	210,569	6,476	274	9,416	3,716	13,406
Meigs	50,508	93,327	16,577	14,679	175,091	3,511	62	3,499	3,774	7,335
Mercer	172,424	28,292	37,863	6,230	244,809	8,648	258	8,466	7,312	16,036
Miami	155,545	14,599	11,928	3,463	185,535	9,542	1,048	7,585	4,446	13,079
Monroe	45,711	113,769	38,748	14,924	213,152	4,880	737	7,193	4,619	12,549
Montgomery	154,124	30.930	18,848	10,463	214,365	10,589	393	11,598	3.964	15,955
Morgan	37,054	132,134	25,115	7,079	201,382	3,693	171	4,051	6,187	10,409
Morrow	90,982	73,453	36,240	1,974	202,649	6,916	624	6,091	5,987	12,702
Muskingum	62,989	39,458	38,566	7,076	148,089	6,766	1,777	9,275	9,344	20,396
Noble	64,021	139,565	21,188	5,292	230,066	4,162	564	4,879	8,070	13.513
Ottawa	69,769	27,658	8,041	5,769	111,237	4,695	168	5,114	2,189	7,471
Paulding	125,292	26,448	18,549	4,049	174,338	6,331	210	4,550	1,839	6,599
Perry	36,759	31,819	100,815	28,397	197,790	5,141	483	5,222	6,555	12,260
Pickaway	125,961	78.237	22,317	8,716	235,231	7,386	2,680	5,742	9.276	17,698
Pike	60,071	45,802	58,039	15,799	179,711	3,938	308	2,309	2,684	5,301
Portage	90,516	118,203	32,956	6,512	248,187	6,939	255	13,638	4,600	18,493
Preble	517,679	49,106	25,491	7,114	239,390	8,439	665	8,084	5,876	14.625
Putnam	140,847	47,206	28,109	6,422	222,584	7,734	401	8,330	5,662	14,393
Richland	150,753	53,782	40,022	3,436	247,993	6,795	273	9,502	5,441	15,216
Ross	133,256	96,966	41,283	12,555	284,060	8,330	2,959	5,530	9,689	18,178
Sandusky	126,333	24,434	19,042	5,214	175,023	6,811	574	6,958	3.942	11,474
Scioto	41,742	48.654	53,271	25,708	169,375	3,500	255	3,547	2,966	6,768
Seneca	173,643	74,254	32,225	1,549	281,671	8.266	742	9,730	5,212	15,684
Shelby	131,040	40,060	25,050	3,535	199,685	7,387	69	7,744	5,612	13,425
Stark	177,880	71,086	24,721	10,754	284,441	11,125	550	16,408	7,348	24,306
Summit	101,586	55,326	18,320	8,508	183,740	7.137	124	13,119	4,787	18,030
Trumbull	113,395	141,387	37,471	5,114	297,367	7,884	1,659	14,792	6,118	22,569
Tuscarawas	74,830	157,702	36,259	9,731	278,522	6,244	422	10,432	6,940	17,794
Union	94,574	107,682	20,457	784	223,497	7,211	284	7,183	6,537	14,004
Van Wert	138,507	52,980	23,669	2,396	217,552	7,026	210	5.880	4,181	10,271
Vinton	38,191	87,601	44,815	33,958	204,565	1,872	198	2,016	2,909	5,123
Warren	106,659	60,849	19,703	4,691	191,902	7,498	446	6,546	3,781	10,773
Washington	60,975	49,698	114,934	63,300	288,907	5,261	191	6,653	5,633	12,477
Wayne	179,783	72,305	33,569	6,911	292,568	10,240	917	13.336	8,247	22,500
Williams	113,344	121,988	26,350	1,115	262,797	6,245	462	7,249	5,480	13,191
Wood	177,301	57,166	21,940	3,955	260,362	10,366	2,288	9,799	3,881	15,968
Wyandot	127,839	57,890	19,759	1,792	207,280	6,806	1,092	6,157	5,172	12,421
Total	8,703,239	6.857,336	2,461,181	707,044	18,728,800	568,327	54,678	669,457	459.142	1,183,295

AGRICULTURAL STATISTICS—Continued.

Counties.	Sheep.					Hogs.		Wool.
	Number owned April, 1907.	Killed by dogs 1906.	Value—1906.	Injured by dogs 1906.	Value—1906.	Total number owned in April, 1907.	For summer markets, 1907.	Pounds shorn. 1906.
Adams	6,380	44	231	6	23	10,201	2,500	26,581
Allen	16,556	111	644	58	126	27,604	11,246	81,817
Ashland	32,833	189	814	22	432	14,829	4,638	214,109
Ashtabula	6,829	185	836	96	324	3,656	942	39,415
Athens	32,292	143	603	51	100	2,268	164	233,169
Auglaize	6,547	33	232	29	130	27,087	7,730	25,210
Belmont	62,064	631	2,394	427	970	7,138	873	402.589
Brown	6,224	83	507	66	389	16,755	3,802	28,357
Butler	7,616	88	571	101	371	23,398	7,060	41,903
Carroll	48,697	78	307	37	75	6,694	1,255	288,975
Champaign	22,064	98	466	351	384	32,426	14,372	121,905
Clark	21,155	110	608	116	305	25,229	8,547	115.793
Clermont	3,302	53	748	19	111	12,762	3,081	17,113
Clinton	14,140	307	1,591	127	194	43,277	24,800	78,560
Columbiana	23,480	218	850	147	411	9,160	1,332	141,325
Coshocton	83,347	290	1,258	156	420	12,595	5,011	578,128
Crawford	42,841	46	213	36	86	24,410	10,473	294,336
Cuyahoga	4,268	114	907	67	163	1,916	151	23,985
Darke	4,614	67	588	35	123	40,322	10,383	23.228
Defiance	14,025	96	550	81	442	15,944	3,505	78,089
Delaware	41,208	190	930	81	355	18,344	6,632	235,436
Erie	8,317	39	194	17	73	5,771	854	58,234
Fairfield	12,498	114	532	46	113	32,896	18,595	72,465
Fayette	8,093	47	226	148	201	32,541	18,512	40,238
Franklin	8,765	151	722	36	112	19,528	3,847	38,644
Fulton	13,148	98	514	319	415	19,641	10,030	78,629
Gallia	11,488	201	1,002	106	231	4,929	50	61.313
Geauga	4,190	63	328	7	18	3,226	631	23,755
Greene	14,998	110	631	81	193	29,590	12,291	106,095
Guernsey	62,511	296	1,135	170	415	5,074	650	412,323
Hamilton	1,417	51	261	12	24	4,261	589	5,204
Hancock	32,400	535	3,159	291	924	32,678	10.823	198,140
Hardin	21,809	86	535	284	455	18,742	4,640	133.128
Harrison	96,535	65	242	70	160	5,003	563	684.147
Henry	6,234	47	188	14	69	16,996	5,243	36,814
Highland	14,705	235	1,205	91	331	32,089	13,409	58,300
Hocking	13,156	147	567	110	226	4,234	480	89,543

Holmes	21,942	246	1,303	70	404	16,256	6,315	146,892
Huron	47,425	208	1,042	195	457	12,510	5,071	358,768
Jackson	3,356	79	224	33	69	3,037	11	14,145
Jefferson	41,207	240	1,232	59	277	4,981	467	274,029
Knox	87,479	160	382	....	....	17,029	3,090	675,275
Lake	4,005	85	415	25	119	1,658	517	15,892
Lawrence	1,107	110	551	12	37	3,081	40	2,876
Licking	91,420	558	2,160	442	540	25,319	8,943	603,352
Logan	28,774	190	878	98	384	29,254	10,945	170,319
Lorain	13,023	162	866	129	355	6,746	1,740	99.020
Lucas	1,583	69	96	20	67	6,781	2,466	8,978
Madison	18,354	169	691	109	737	32,266	21,991	64.503
Mahoning	15,921	62	304	38	460	7,212	471	99,967
Marion	47,892	219	992	48	235	27,784	8,699	283,012
Medina	18,576	250	1,248	143	422	8,436	2,216	126,307
Meigs	21,554	447	774	33	58	1,924	29	135.071
Mercer	9,789	95	625	94	350	35,021	7,870	40,418
Miami	1,922	71	431	57	256	16,750	3,315	9,674
Monroe	8,364	184	727	73	168	6,329	558	50,508
Montgomery	2,105	4	25	2	6	19,619	3,250	8,463
Morgan	60,683	339	1,395	178	363	4,313	278	411,225
Morrow	65,924	126	580	74	197	12,265	4,350	472,424
Muskingum	80,501	481	1,643	158	364	9,700	1,939	581,551
Noble	50,092	539	2,215	278	645	5,544	1,354	330,549
Ottawa	5,369	30	209	43	178	5,954	996	35,063
Paulding	8,551	192	1,188	105	307	13,310	3,134	37,026
Perry	28,013	216	899	123	321	8,763	2,541	155,496
Pickaway	6,723	111	659	57	331	24,842	7,522	33.024
Pike	3,322	60	226	39	92	6,485	867	13,735
Portage	14,603	189	1,053	171	637	6,293	1,251	90,938
Preble	5,721	79	421	22	111	32,742	11,591	19,906
Putnam	10,041	100	714	95	1,221	29,986	10,833	49,026
Richland	36,253	151	646	43	122	18,911	3,632	225,625
Ross	8,384	242	1,133	347	1,682	26,611	7,939	46,833
Sandusky	11,019	82	614	62	187	16,754	3,268	57,758
Scioto	763	18	38	8	20	5,178	....	2.453
Seneca	33,905	325	1,847	142	554	28,510	12,160	255,550
Shelby	4,426	79	448	80	313	16,430	1,893	23,334
Stark	14,310	510	1,881	506	1,009	18,959	1,701	79,095
Summit	4,319	82	442	73	317	8,615	1,228	24.502
Trumbull	13,408	148	697	131	322	6,080	833	66,845
Tuscarawas	26,327	337	1,294	88	121	10,874	1,202	156,970
Union	39,037	131	691	33	59	33,794	12,842	231,553
Van Wert	9,993	88	528	52	176	24,463	6,915	61,738
Vinton	13,494	150	615	85	152	1,766	22	77,946
Warren	5,057	107	665	46	226	23,749	7,524	20,506
Washington	27,690	287	995	88	192	5,472	561	180,076
Wayne	18,142	244	1,222	22	282	23,754	8,305	103.944
Williams	22,910	61	281	173	157	25,047	9,074	184,642
Wood	10,885	80	482	93	296	29,017	9,340	46,845
Wyandot	60,921	241	823	129	392	27,263	12,351	338,809
Total	2,017,325	14,892	68,799	9,135	26,641	1,436,651	465,154	12,789,451

AGRICULTURAL STATISTICS—Concluded.

Counties.	Domestic Animals Died from Diseases in 1906.							
	Horses.		Cattle.		Sheep.		Hogs.	
	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.
Adams	130	$ 8,090	123	$ 2,988	308	$ 1,260	227	$ 1,753
Allen	155	16,430	125	3,069	418	2,108	347	2,933
Ashland	103	9,120	94	2,646	650	2,473	149	1,442
Ashtabula	183	12,370	242	7,622	168	747	139	1,182
Athens	47	3,025	57	1,128	537	1,453	16	178
Auglaize	160	15,260	167	4,459	140	697	405	3,004
Belmont	121	9,413	176	4,472	934	2,569	115	1,067
Brown	104	8,075	121	2,799	247	1,227	282	2,121
Butler	184	13,955	229	5,653	478	2,297	4,414	24,342
Carroll	67	5,982	111	2,455	720	1,765	36	506
Champaign	184	18,761	122	3,299	546	2,277	4,831	26,560
Clark	165	14,235	135	3,755	376	1,553	1,485	9,101
Clermont	160	10,165	175	4,548	180	829	322	2,552
Clinton	180	14.915	140	3,472	559	2,402	2,868	13,300
Columbiana	91	7,351	146	4,043	287	887	192	1,424
Coshocton	112	9,499	141	3,234	1,065	3,175	122	975
Crawford	82	8,015	97	2.560	577	2,159	439	2,763
Cuyahoga	134	9,830	162	6.335	45	255	159	1,124
Darke	242	20,910	283	6,700	198	1,249	690	5,754
Defiance	81	8,275	82	2,206	437	2,477	347	2,050
Delaware	143	13,005	162	4,100	816	2,746	279	1,689
Erie	107	6,099	84	2,396	138	529	280	2,869
Fairfield	149	12,890	221	4.904	382	1,694	392	3,060
Fayette	118	9.143	90	2,366	168	800	1,333	10,694
Franklin	239	18,986	268	6,969	485	1,514	944	5,625
Fulton	127	13,365	124	4,127	345	1,919	202	1,858
Gallia	110	7,245	141	2,775	711	2,590	136	1,145
Geauga	113	8,695	223	7,759	191	717	85	809
Greene	153	13,780	143	4,106	396	2,532	3,027	22,341
Guernsey	64	5,840	120	3,164	951	2,432	74	638
Hamilton	150	7,955	268	5,167	48	178	808	5,110
Hancock	166	16,396	223	5,817	1,232	6,789	508	4.952
Hardin	101	9,360	101	2.903	775	3,350	1,121	5,368
Harrison	70	6,645	108	2.819	877	2,686	38	380
Henry	195	17,364	182	4,883	226	1,186	323	2.579
Highland	80	7,005	80	2,127	403	1,813	442	2,583
Hocking	93	5,665	130	2,372	304	864	596	1,387

Holmes	105	11,430	103	2,507	482	2,013	201	1,800
Huron	129	9,960	93	2,915	906	3,423	197	1,336
Jackson	45	3,305	95	1,514	75	229	42	413
Jefferson	356	8,789	131	3,392	861	2,264	112	882
Knox	104	5,749	128	2,771	450	1,941	258	1,045
Lake	55	3,440	40	1,352	25	82	30	330
Lawrence	80	5,115	144	2,208	35	159	104	990
Licking	195	15,310	228	5,726	2,232	6,866	291	2,074
Logan	185	14,935	149	4,081	628	2,581	546	3,188
Lorain	133	10,710	129	4,505	264	721	289	2,163
Lucas	141	7,770	113	3,119	51	272	355	2,421
Madison	202	16,385	293	5,104	769	2,704	5,409	26,742
Mahoning	88	7,475	124	3,578	144	513	117	905
Marion	62	6,820	61	1,855	386	1,363	954	4,301
Medina	159	12,602	168	5,370	380	2,070	197	2,065
Meigs	52	3,105	89	1,518	441	1,162	51	441
Mercer	219	20,693	232	5,163	387	2,481	2,450	12,849
Miami	205	17,230	161	3,624	104	486	529	4,018
Monroe	130	9,995	174	3,534	181	674	144	1,225
Montgomery	222	17,965	222	5,383	126	666	1,327	7,033
Morgan	73	5,825	125	2,153	1,222	3,642	55	482
Morrow	99	9,315	92	1,979	537	1,892	155	1,215
Muskingum	168	11,267	198	4,155	968	2,434	158	9,005
Noble	58	4,475	137	2,677	619	1,767	119	807
Ottawa	61	4,580	42	1,095	36	193	114	548
Paulding	164	13,570	104	2,629	330	1,239	233	1,561
Perry	75	5,475	129	2,394	321	1,063	120	955
Pickaway	141	14,765	162	3,965	383	1,952	498	3,439
Pike	126	8,298	122	2,653	358	1,293	217	1,436
Portage	139	11,645	258	7,861	319	1,387	139	1,112
Preble	165	14,870	201	4,994	334	1,717	1,446	9,277
Putnam	162	17,150	156	3,952	450	2,170	624	4,159
Richland	159	16,577	181	4,160	904	3,253	439	3,399
Ross	192	14,185	282	3,992	428	1,626	486	2,785
Sandusky	99	9,130	67	1,483	479	1,368	407	2,485
Scioto	92	5,312	133	2,490	38	155	230	1,597
Seneca	226	23,395	212	5,616	1,110	5,871	670	5,544
Shelby	133	12,695	150	3,714	176	837	265	2,017
Stark	297	23,666	303	8,005	630	2,287	907	6,914
Summit	181	14,640	236	7,308	128	641	334	2,692
Trumbull	198	13,305	278	8,739	199	781	229	1,644
Tuscarawas	137	12,815	210	5,253	495	1,497	277	2,554
Union	139	12,917	113	3,169	735	2,951	854	4,103
Van Wert	97	11,080	91	2,251	321	2,034	490	2,626
Vinton	46	2,510	70	1,215	408	996	45	332
Warren	148	11,645	170	4,435	363	1,758	2,271	15,203
Washington	102	6,284	148	2,945	405	1,155	111	1,075
Wayne	224	23,676	274	6,559	718	2,890	385	3,483
Williams	147	12,005	161	4,864	1,277	7,702	285	2,748
Wood	252	23,835	278	6,515	384	1,835	740	5,896
Wyandot	159	14,825	127	3,346	1,678	6,509	2,454	15,152
Total	12,189	$997,611	13,683	$341,982	40,998	$168,263	57,533	$370,284

TABLES OF COMPARATIVE STATISTICS AS COMPILED BY THE SECRETARY OF AGRICULTURE

COMPARATIVE TABLE SHOWING PRODUCTION OF WHEAT IN OHIO FOR TEN YEARS.

Counties.	Number of Bushels.									
	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.
Adams	195,150	194,193	175,516	148,545	178,584	150,417	125,325	218,156	304,058	241,235
Allen	416,343	366,417	201,866	324,217	524,268	473,816	49,611	560,722	400,588	328,024
Ashland	565,032	396,849	259,605	526,045	534,061	386,185	199,992	602,971	521,222	597,622
Ashtabula	106,717	105,991	18,432	134,833	154,276	121,544	51,554	241,819	291,870	200,208
Athens	89,599	94,125	86,082	93,066	87,075	108,126	128,315	151,795	181,279	202,247
Auglaize	735,251	523,108	332,561	487,651	862,655	697,791	26,310	775,151	509,909	399,480
Belmont	247,259	193,872	124,515	274,261	299,477	237,777	174,399	274,604	356,622	406,539
Brown	215,128	214,685	158,472	149,303	178,585	176,357	130,315	259,818	353,060	251,883
Butler	1,147,199	929,657	654,191	707,537	1,103,105	818,415	237,830	108,176	1,065,347	916,826
Carroll	220,743	169,941	121,654	198,306	204,374	183,182	80,854	207,543	274,745	250,066
Champaign	513,749	382,263	180,371	458,138	623,121	524,919	44,697	783,253	648,804	514,096
Clark	522,098	464,266	275,020	399,583	587,708	422,764	54,618	806,942	625,155	539,361
Clermont	208,195	158,973	86,641	100,295	113,865	117,341	74,808	192,959	269,413	162,288
Clinton	769,139	644,864	489,514	459,657	526,598	348,227	33,690	687,147	572,322	498,287
Columbiana	363,837	299,583	264,923	360,164	347,311	469,590	205,112	320,530	423,274	431,575
Coshocton	391,203	281,275	148,294	303,451	353,663	226,829	68,657	338,998	437,704	550,925
Crawford	569,645	537,429	390,777	401,127	499,291	364,681	144,479	650,523	453,157	482,632
Cuyahoga	160,613	155,941	89,477	141,496	199,345	212,816	72,019	202,621	219,437	162,382
Darke	1,217,299	940,446	335,161	815,840	1,253,069	1,180,245	2,137	1,351,096	1,065,612	774,220
Defiance	301,748	313,761	174,806	150,951	218,495	369,932	197,867	207,468	377,332	252,654
Delaware	260,729	223,417	156,652	124,857	136,167	131,695	50,637	479,210	279,802	208,277
Erie	353,895	299,347	178,772	243,747	347,229	265,323	61,513	388,458	354,051	414,913
Fairfield	773,091	698,433	606,372	585,493	591,968	399,879	82,395	677,034	736,986	679,559
Fayette	660,292	517,428	392,219	425,866	611,380	442,129	20,516	958,175	637,272	646,045
Franklin	584,232	435,088	415,764	346,855	453,293	409,985	64,551	716,942	598,842	563,884
Fulton	229,581	254,696	125,359	173,507	204,034	289,448	149,010	82,381	512,947	365,356
Gallia	141,456	110,384	98,537	116,478	85,019	131,520	199,466	216,132	268,480	242,274
Geauga	95,066	107,843	39,693	115,501	120,182	98,753	32,643	173,755	201,198	156,257
Greene	800,772	608,970	357,349	593,092	859,786	549,071	86,913	850,817	709,532	616,485
Guernsey	180,838	142,163	97,442	143,339	146,679	166,050	67,459	205,903	261,054	277,848
Hamilton	296,276	237,689	140,508	425,715	466,168	238,394	114,346	294,745	289,073	260,505
Hancock	726,245	626,210	298,599	509,804	867,477	776,659	88,553	946,112	759,325	626,425
Hardin	301,897	291,809	132,458	303,581	469,907	498,913	76,888	620,912	396,011	289,929
Harrison	163,943	126,369	62,962	161,842	196,065	157,152	70,144	159,877	226,375	234,257
Henry	465,149	369,942	146,945	335,378	372,963	476,426	340,478	207,346	676,004	518,881
Highland	566,981	571,171	440,412	323,171	602,026	250,277	20,649	413,624	549,559	535,638
Hocking	122,113	142,252	113,155	129,578	112,283	79,579	33,972	158,223	218,415	189,996
Holmes	425,285	306,785	227,257	456,296	439,892	360,488	210,686	457,884	435,711	449,842
Huron	825,564	626,893	395,487	475,545	667,678	552,005	76,904	781,246	506,725	541,346
Jackson	78,966	60,787	50,620	67,904	50,162	64,235	85,555	134,424	163,863	141,424

Jefferson	189,302	148,687	88,091	183,173	216,457	179,125	117,194	177,028	272,035	293,037
Knox	422,070	420,960	419,860	429,047	326,189	249,389	209,751	526,682	543,823	621,728
Lake	68,415	54,219	20,185	53,527	64,341	45,683	14,274	100,367	107,577	91,714
Lawrence	31,847	32,614	27,223	31,141	35,903	70,037	73,565	101,183	97,307	67,438
Licking	501,242	393,717	334,272	442,639	319,634	223,336	92,001	615,650	634,725	416,127
Logan	428,958	294,837	99,640	372,444	609,775	500,450	45,119	739,302	414,629	328,759
Lorain	494,292	404,248	258,228	356,840	408,819	335,170	100,296	402,773	393,995	409,387
Lucas	141,287	159,984	53,864	122,761	193,038	204,711	160,815	46,565	332,367	262,385
Madison	247,978	151,838	108,951	136,341	239,983	302,144	28,197	891,327	655,771	420,933
Mahoning	227,790	397,965	184,228	274,480	255,104	245,291	111,987	231,788	326,816	408,650
Marion	341,625	279,520	222,524	222,556	380,462	244,409	94,822	605,021	350,654	323,423
Medina	435,684	453,326	308,927	383,886	431,984	398,232	135,949	311,808	452,860	429,131
Meigs	164,146	137,140	119,100	135,563	125,041	133,353	220,452	237,695	264,098	287,824
Mercer	887,215	605,498	417,556	450,140	565,285	595,153	9,029	766,255	446,749	367,945
Miami	962,924	748,855	406,288	619,491	957,574	747,099	99,305	876,799	861,354	668,198
Monroe	198,024	167,926	138,499	215,103	184,316	125,685	133,306	239,907	241,937	272,828
Montgomery	788,469	701,389	318,074	616,037	905,662	613,810	116,630	859,863	812,677	564,339
Morgan	184,265	179,101	160,337	141,511	112,575	141,974	111,445	234,544	206,117	228,180
Morrow	299,521	275,155	207,837	276,293	218,659	118,317	112,168	434,262	288,895	241,085
Muskingum	382,934	289,315	235,024	283,998	288,752	253,727	102,953	367,125	464,467	429,171
Noble	174,367	155,507	106,083	154,181	134,789	136,422	106,294	164,328	171,001	232,364
Ottawa	300,638	230,048	122,532	171,418	328,997	282,899	121,325	184,651	326,944	323,890
Paulding	313,569	201,098	104,008	153,925	241,148	354,369	356,381	74,689	302,566	120,950
Perry	278,424	212,817	317,231	181,779	183,569	145,070	33,073	252,250	329,685	306,435
Pickaway	980,728	982,922	729,031	634,030	885,657	685,119	114,004	994,225	800,881	951,527
Pike	198,010	141,795	133,069	94,178	108,481	141,117	112,698	203,170	258,229	228,109
Portage	311,303	337,380	239,819	348,747	362,178	303,799	192,354	370,435	457,506	370,609
Preble	1,075,414	756,960	327,397	531,004	1,061,637	649,550	1,647	952,659	922,193	601,159
Putnam	831,022	590,716	199,355	525,643	696,675	651,576	300,350	879,735	643,313	561,813
Richland	673,544	581,504	363,954	607,350	553,359	471,923	221,532	690,417	615,171	617,176
Ross	763,752	664,366	551,973	462,762	572,107	454,629	132,849	634,346	760,329	771,331
Sandusky	729,257	519,199	259,329	449,398	665,273	533,444	71,472	1,188,685	697,025	740,777
Scioto	218,898	164,486	164,860	130,278	147,060	193,688	244,817	246,556	288,828	263,944
Seneca	1,286,689	964,433	547,829	723,383	1,052,977	839,966	83,566	1,089,356	891,059	874,190
Shelby	586,556	464,576	349,980	450,296	805,963	646,641	6,407	713,427	505,042	351,181
Stark	941,182	753,267	601,387	891,259	978,880	784,088	571,534	775,863	993,695	900,724
Summit	484,191	430,401	274,878	427,288	488,085	404,454	304,516	535,302	614,415	525,724
Trumbull	102,472	161,527	70,359	207,699	188,209	180,176	68,465	274,151	296,383	245,415
Tuscarawas	423,472	356,607	190,983	408,564	417,197	245,283	63,053	374,922	515,940	500,700
Union	202,783	189,160	166,324	170,175	230,449	278,924	45,962	526,909	292,458	298,462
Van Wert	557,124	414,017	278,222	322,420	471,458	532,395	209,572	534,494	559,256	365,988
Vinton	55,225	48,029	40,685	58,961	58,714	43,520	50,452	101,428	134,096	107,085
Warren	613,144	444,263	304,870	358,854	446,659	332,929	54,288	456,352	529,844	411,365
Washington	295,570	290,031	219,297	251,281	221,023	196,019	244,163	411,392	394,084	417,713
Wayne	1,094,255	751,656	629,155	900,144	926,362	708,096	565,707	789,228	867,836	945,872
Williams	235,451	312,658	187,200	231,349	235,624	291,612	57,657	304,170	352,437	286,815
Wood	578,324	502,459	157,958	453,687	562,169	621,036	321,605	507,902	796,772	724,633
Wyandot	568,010	419,027	279,306	335,328	391,401	386,599	88,332	607,221	423,694	418,757
Total product	39,279,680	32,462,786	21,090,222	29,074,367	36,901,212	31,150,373	10,866,155	41,469,703	41,041,671	36,718,686
Total area	2,022,784	1,878,197	1,720,623	1,981,573	2,054,588	2,176,723	2,468,280	2,957,616	2,637,788	2,273,712

Average area for 10 years, 2,217,188 acres.
Average product for 10 years, 32,005,486 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF BARLEY IN OHIO FOR TEN YEARS.

Counties.	Number of Bushels. (Includes Fall and Spring Barley.)									
	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.
Adams	....	....	....	....	....	200	....	....	....	130
Allen	4,466	5,507	5,635	4,237	14,139	14,391	17,937	1,742	2,757	3,854
Ashland	723	836	1,216	2,651	3,317	3,582	2,037	3,758	2,798	3,640
Ashtabula	233	570	575	636	1,283	764	953	720	962	1,637
Athens	....	....	336	....	....	....	....	....	....	....
Auglaize	200	1,107	1,120	512	3,527	6,517	8,227	2,919	3,304	6,590
Belmont	18,055	360	156	78	431	509	472	542	1,381	1,429
Brown	900	....	80	20	2	72	36	26	....	....
Butler	11,890	11,335	26,124	35,196	56,519	33,399	8,680	25,665	20,695	62,521
Carroll	280	....	....	45	....	51	286	141	36	55
Champaign	490	4,383	1,890	2,060	1,394	5,859	10,153	3,841	1,345	640
Clark	1,060	3,675	2,520	620	2,121	2,672	2,868	2,399	144	569
Clermont	....	753	....	8	....	20	....	394	140	8
Clinton	2,330	2,232	518	90	3,155	1,910	681	1,390	585	1,110
Columbiana	30	65	60	65	255	242	420	455	700	503
Coshocton	30	....	84	118	453	1,437	884	562	279	15
Crawford	1,346	1,481	825	1,944	3,344	3,261	2,434	2,443	5,179	4,668
Cuyahoga	50	498	140	262	658	297	1,198	40	530	194
Darke	1,553	1,835	2,430	2,516	5,320	11,936	21,780	7,521	14,860	13,473
Defiance	17,480	31,584	48,274	52,472	83,678	48,737	43,279	42,213	27,287	21,679
Delaware	185	360	....	....	292	1,502	1,105	1,240	....	200
Erie	3,900	4,220	8,190	6,555	10,674	11,549	9,878	7,768	16,019	18,392
Fairfield	35	431	....	1,335	1,650	1,534	1,059	1,227	460	895
Fayette	405	975	250	140	1,045	7,903	2,785	1,969	172	466
Franklin	....	....	360	340	167	1,067	1,008	71	....	1,000
Fulton	34,961	38,529	33,319	29,123	32,189	14,146	34,268	29,568	12,432	6,962
Gallia	60	20	....	....	....	25	7	....	10	3
Geauga	761	511	150	160	758	850	892	567	237	198
Greene	890	758	180	96	1,203	1,236	2,219	772	395	2,254
Guernsey	155	125	98	75	225	32	15	230	270	829
Hamilton	1,022	385	2,394	4,820	6,167	3,331	1,856	2,627	4,251	14,597
Hancock	3,351	10,228	4,537	4,380	16,385	34,969	43,814	12,156	5,768	4,032
Hardin	385	1,714	1,140	1,414	5,254	7,896	2,829	468	250	336
Harrison	280	207	60	....	....	47	724	1,066	1,204	1,170
Henry	83,138	94,730	165,424	88,753	127,350	65,137	95,467	91,119	42,163	40,834
Highland	440	1,137	1,080	500	1,241	823	440	360	....	26
Hocking	....	60	....	....	....	113	....	....	10	....
Holmes	....	....	....	....	887	1,499	890	342	638	1,161
Huron	1,020	1,509	580	1,285	3,946	5,731	2,563	4,055	9,973	8,828
Jackson	....	....	....	200	....	18	....	....	5	....

Jefferson	298	80	320	260	527	516	652	1,137	1,142	1,623
Knox	925	....	....	178	540	220	935	1,583	530	84
Lake	....	875	3,402	1,234	632	1,613	3,610	1,148	314	417
Lawrence	60	....	....	....	140	....	....	....	....	....
Licking	3,630	720	816	620	800	3,055	412	116	245	684
Logan	2,474	3,456	1,536	2,533	4,731	8,237	3,777	1,127	855	2,215
Lorain	31,550	2,694	1,275	1,125	1,641	1,911	1,640	2,246	2,303	742
Lucas	1,144	26,995	20,192	16,130	19,135	10,100	10,735	14,985	10,965	8,544
Madison	....	4,112	1,392	800	1,727	8,914	10,746	567	250	305
Mahoning	560	34	....	....	473	110	182	193	540	49
Marion	1,541	655	560	200	533	648	1,300	197	859	92
Medina	....	553	2,048	438	1,447	2,064	5,745	4,100	2,372	1,098
Meigs	4,930	20	24	....	60	28	19	12	....	628
Mercer	140	13,588	23,046	15,439	37,330	38,204	25,180	10,337	6,350	5,463
Miami	....	358	....	....	420	2,573	6,102	2,277	3,346	4,119
Monroe	1,300	....	32	100	93	20	67	7	....	....
Montgomery	119	1,608	875	1,670	3,120	4,722	581	3,741	2,987	9,460
Morgan	....	100	48	....	30	24	....	85	65	2
Morrow	184	....	....	....	576	101	121	35	....	....
Muskingum	40	220	120	740	623	1,052	333	83	209	225
Noble	37,550	....	....	....	....	121	....	4	....	100
Ottawa	20,240	37,596	167,008	59,467	57,332	55,881	31,845	30,756	48.883	52,933
Paulding	80	49,507	138,480	140,450	91,805	241,388	220,751	135,305	74,924	32,166
Perry	....	276	....	....	450	200	....	135	25	....
Pickaway	400	....	375	....	253	1,840	5,262	125	....	1,200
Pike	461	316	198	....	....	101	2,100	50	....	660
Portage	900	230	378	436	157	68	390	35	320	....
Preble	25,488	1,430	551	277	1,840	1,963	860	1,235	1,785	2,046
Putnam	1,052	46,606	69,300	52,639	92,542	75,374	115,796	38,733	33,158	29,547
Richland	190	840	1,472	2,164	4,976	4,720	3,469	3,831	5,088	5,873
Ross	5,583	657	468	20	1,190	2,210	591	20	....	400
Sandusky	....	2,134	10,180	7,904	9,257	7,783	12,175	2,982	5,246	5,425
Scioto	2,208	....	....	....	....	93	....	42	320	1,105
Seneca	375	1,558	6,048	1,358	4,724	13,015	31,047	3,789	2,285	780
Shelby	80	370	2,400	24	1,374	2,401	2,532	2,970	4,302	8,001
Stark	1,771	292	462	199	351	1,582	1,475	728	1,429	806
Summit	550	1,726	713	840	781	321	293	206	1,008	776
Trumbull	135	30	1,000	128	432	50	296	36	....	75
Tuscarawas	899	75	....	....	100	70	343	92	362	1,162
Union	28	1,645	770	600	1,181	8,878	9,706	577	234	118
Van Wert	587	50,613	88,780	123,249	241,963	210,156	194,011	76,855	32,271	41,948
Vinton	....	....	....	....	....	....	11	....	....	250
Warren	2,350	1,350	3,438	10,015	17,287	12,456	7,822	8,126	9,830	12,217
Washington	106	....	88	54	25	....	....	5	28	....
Wayne	725	627	484	1,080	1,651	1,641	3,232	1.115	1,615	3,015
Williams	53,549	37,639	42,543	40,536	42,679	143,919	55,597	68.935	43,512	14,547
Wood	18,208	38,712	68,100	81,891	114,428	169,092	126,214	78,639	62,237	42,991
Wyandot	1,260	564	6,525	5,775	960	2,059	2,099	955	388	516
Total product	443,751	552,991	975,192	813,581	1,351,345	1,336,128	1,224,198	752,633	539,812	519,305
Total area	14,659	23,177	35,398	38,817	45,776	54,428	41,939	26,684	20,254	21,008

Average area for 10 years, 35,470 acres.
Average product for 10 years, 897,176 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF RYE IN OHIO FOR TEN YEARS.

Counties.	Number of Bushels.									
	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.
Adams	1,535	4,021	6,935	3,075	6,551	10.305	2,118	808	2,649	6,914
Allen	14,677	8,924	3.151	2.939	9,031	18,065	3,078	2.364	2.562	3,635
Ashland	3,431	3,656	2,814	5.519	8,961	10,916	2,964	1,353	2,935	13,216½
Ashtabula	15,977	21,036	6,362	12.115	21,123	23,362	5,411	4,985	6,671	8,288
Athens	89	396	1,020	555	1,042	933	451	440	....	1,835
Auglaize	7,671	7,942	3.872	2,184	6,306	27.524	3.038	1,731	3.600	5,629
Belmont	1,882	1.828	1,440	2,212	2,652	2,201	1,025	854	1,529	9,206
Brown	6,948	19.900	28,784	13.146	15,377	19.406	4.910	1,838	4,501	12,668
Butler	3,078	4,546	3,411	3,768	5,861	8.918	2,380	472	886	6,298
Carroll	1,203	1.496	1,562	482	1.816	2.949	803	528	2,277	6.454
Champaign	9,510	15.264	5,490	4,559	10,768	32,456	8,184	1.630	2,018	4,463
Clark	11,526	24,368	9,866	5.403	7.979	23.003	11,157	5,239	2.174	9,406
Clermont	8,804	25,448	20,341	9,170	19,916	35,940	12,626	6,589	9,462	10,649
Clinton	5,896	12.761	10,278	6.716	10,098	11,235	3,081	1,771	3,852	8,403
Columbiana	2,358	3.183	2,309	2,401	3,832	5,318	2,368	1.249	2,502	7,634
Coshocton	2,152	2,562	1,671	1,783	9,857	13.941	2,333	1,710	5.562	26,262
Crawford	1,080	769	1,370	1.036	4,515	2.137	379	473	1.519	3,784
Cuyahoga	10,732	18.410	6,858	9,482	14,557	25,166	8,790	5,658	9,265	15,982
Darke	9.885	18,230	4,741	3,455	7,160	36.384	6,568	4.470	8,735	16,759
Defiance	3,797	9,244	5,596	1.377	3,285	17,954	5,299	1,546	2.221	3,226
Delaware	7,269	10.838	6.424	6,971	12,293	8.403	2,236	1,067	2,343	3.273
Erie	6,378	8,648	2,848	4.044	10,424	20,771	6.304	2,260	3,883	13.591
Fairfield	992	4,337	5,993	5,086	12,433	33,708	4,401	1,789	3,853	15.157
Fayette	10.471	12,169	7,636	1.708	3,148	21.142	1,448	1,391	1,342	11,725
Franklin	6,339	23,492	23,071	12,556	18,146	32,171	7,055	2,783	3,581	21,017
Fulton	13,718	19,418	6,389	11,229	15.901	17,651	1.721	2,694	6,498	10.546
Gallia	577	2,213	3,132	3,412	1,747	760	519	238	1,024	2,121
Geauga	3,165	5.803	1,363	2.640	5,482	4,848	456	278	1,829	5,335
Greene	15,265	33,711	12.047	3,673	10,435	11,803	2,870	1,790	1,289	8,228
Guernsey	1,651	1,847	1,466	1.554	4,132	14.161	2,154	639	1,551	6,524
Hamilton	5.354	9.353	5,483	11,030	12.824	22.221	12,829	7.743	12,000	17,581
Hancock	6,954	8,055	3,359	4,328	10,953	48.919	6,980	3,044	3,887	6,529
Hardin	9,583	9,722	2,285	5,361	22,136	15.936	9,247	1,853	3,642	3,527
Harrison	303	920	646	177	981	1,875	557	291	559	1,414
Henry	21,458	33,795	21,349	27,217	62,212	109,447	79,586	23,478	43.195	58,383
Highland	1,793	6,865	8.910	2,528	16,230	29,452	2,935	1,108	3,702	19,533
Hocking	262	1,286	1,975	2.188	3,606	10,173	1,512	302	1,840	2,157
Holmes	2,292	3.395	883	3,647	8,058	8,718	2,358	1,130	7,042	17,048
Huron	2,230	3,373	1,495	330	4,527	23,082	2,077	1,656	2,851	8,907
Jackson	326	736	644	664	1,029	1.456	710	192	146	802
Jefferson	784	1,006	495	537	1,529	2,386	659	199	410	2,731
Knox	5,349	5,306	5,186	7,403	19,264	12,516	1,643	874	5,032	20,500

Lake	9,517	17,872	7,428	9,165	13,373	18,061	7,951	6,204	5,073	10,830
Lawrence	308	211	504	205	147	448	319	70	264	454
Licking	12,024	16,180	28,194	18,433	44,201	34,956	5,262	4,159	12,721	37,155
Logan	30,815	24,904	10,055	11,035	20,789	24,548	4,270	2,109	4,267	7,037
Lorain	7,394	7,971	3,132	3,825	2,845	9,795	1,146	391	1,245	7,570
Lucas	25,610	24,088	8,904	9,748	20,835	30,349	15,453	5,122	11,029	22,263
Madison	4,581	12,698	7,325	7,916	15,168	32,421	3,890	1,206	355	7,725
Mahoning	2,423	13,179	2,763	3,154	4,351	8,139	1,577	1,134	2,959	12,813
Marion	3,118	5,493	4,937	4,401	8,634	2,302	819	676	1,770	2,951
Medina	9,893	17,908	8,410	10,965	18,799	24,654	3,857	3,415	5,084	21,939
Meigs	303	2,320	2,940	1,925	2,215	2,256	940	449	1,003	2,420
Mercer	6,434	6,127	4,028	1,996	4,046	29,626	2,436	4,038	6,050	9,263
Miami	1,718	4,416	905	625	1,551	17,185	3,253	1,142	1,995	7,623
Monroe	1,659	2,160	2,087	2,847	5,719	4,616	2,207	2,020	3,284	11,289
Montgomery	4,871	9,216	3,762	1,836	9,968	10,972	996	404	1,785	5,470
Morgan	1,231	1,659	1,747	1,586	1,406	4,868	354	199	349	2,163
Morrow	3,736	5,685	2,776	6,808	22,222	6,810	1,847	1,866	3,287	9,990
Muskingum	2,535	5,291	6,358	5,643	12,960	19,244	4,469	1,595	3,436	12,737
Noble	625	1,982	880	1,296	1,361	1,465	510	310	342	3,109
Ottawa	10,300	7,363	1,920	2,280	9,474	27,273	6,269	1,743	4,347	10,449
Paulding	48,382	31,006	84,277	9,902	30,001	55,719	23,642	4,208	9,060	6,633
Perry	861	2,083	4,408	2,487	5,454	14,530	1,010	505	907	4,482
Pickaway	2,040	6,709	6,834	1,984	7,156	20,205	5,342	191	1,178	14,263
Pike	665	1,103	2,387	1,582	3,620	4,976	1,265	337	1,410	2,246
Portage	3,161	9,825	2,854	5,241	8,763	8,065	2,032	1,147	4,020	14,599
Preble	5,230	9,312	3,087	465	2,104	15,525	1,446	1,074	1,644	5,793
Putnam	19,629	16,162	13,435	11,740	33,324	62,281	12,176	4,722	5,371	8,633
Richland	3,917	5,931	3,871	5,387	11,945	10,137	3,918	2,783	6,138	17,553
Ross	1,224	5,840	4,904	2,673	5,916	9,687	1,936	843	3,286	11,730
Sandusky	5,057	5,717	3,038	2,592	13,095	31,449	4,959	2,145	2,762	10,074
Scioto	454	433	836	488	1,052	601	138	139	716	792
Seneca	3,192	3,900	1,205	815	4,840	16,466	2,644	811	1,700	3,928
Shelby	1,855	2,252	1,335	690	5,704	45,400	8,063	3,925	4,205	5,736
Stark	3,879	3,916	3,313	3,318	6,009	6,193	3,560	822	3,337	12,751
Summit	5,691	6,473	2,125	4,594	6,546	7,169	1,536	1,508	3,406	7,346
Trumbull	3,421	6,740	1,844	3,414	5,855	6,239	1,851	1,290	3,670	10,370
Tuscarawas	3,788	2,709	1,523	2,307	9,811	16,673	2,337	1,027	3,218	11,958
Union	14,545	15,644	14,848	9,067	15,385	9,692	1,659	1,599	1,742	4,853
Van Wert	37,622	24,974	9,719	10,396	23,085	56,521	17,262	3,982	6,851	7,663
Vinton	80	480	873	1,303	2,103	2,047	567	164	446	820
Warren	7,919	15,753	9,186	3,718	12,522	20,765	5,462	2,373	2,070	11,877
Washington	836	1,653	1,912	1,480	1,453	1,891	1,290	494	1,881	5,406
Wayne	5,313	6,551	3,554	5,341	11,221	9,979	3,274	688	1,822	9,793
Williams	7,525	11,043	4,839	3,157	3,199	13,746	2,643	3,298	3,444	7,219
Wood	15,584	15,141	3,533	5,401	15,277	62,579	12,018	3,524	5,801	11,070
Wyandot	560	5,187	1,179	1,484	3,872	8,266	2,179	1,352	2,609	4,942
Total product	586,269	813,532	550,924	416,735	987,553	1,606,493	435,254	185,710	339,757	855,120
Total area	41,367	60,400	42,996	41,180	73,066	129,414	34,262	15,359	28,737	65,684

Average product for 10 years, 677,735 bushels.
Average area for 10 years, 53,246 acres.

COMPARATIVE TABLE SHOWING PRODUCTION OF OATS IN OHIO FOR TEN YEARS.

Counties.	Number of Bushels.									
	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.
Adams	48,438	78,242	81,223	59,534	94,721	84,665	37,684	17,929	21,438	43,329
Allen	630,632	578,986	605,147	302,810	432,052	397,914	584,091	251,511	281,999	349,308
Ashland	633.377	736.244	713.459	565,682	771.266	600,159	627.475	659,558	587,134	609,853
Ashtabula	684,932	879,549	592,084	869,065	872,233	692,341	866,934	794,959	653,504	618,906
Athens	36,488	50,489	47.550	22,175	38,504	34,477	27,310	14,862	26,205	32,725
Auglaize	762,172	783,205	961.681	471,366	666,275	538,610	847,811	350,996	367,136	436.821
Belmont	216.483	269,008	331,365	192,775	254.552	192,815	201,014	17,338	133,704	183,874
Brown	81,243	185,690	211,317	133,557	227,823	176,719	131,018	107,276	69,462	107,478
Butler	211,672	364,545	377.936	209.774	378,654	231,571	432,839	110,330	119,349	234,489
Carroll	343,717	380,933	373.558	331,410	371,666	323,903	470,137	441,821	364,044	375.584
Champaign	768,787	1,153,658	1,383.138	602,733	747,141	357.408	788,270	165.204	262,664	278,744
Clark	343,454	498,913	733,043	302,931	433.413	243.432	447,183	135,621	159,362	190.345
Clermont	178,154	307,068	347.474	175,627	322.620	209,864	197,330	128,181	119,974	117,593
Clinton	161,479	345,918	377,170	121,359	356,059	162,546	232,554	49,114	53,357	99.373
Columbiana	600.678	695,977	563,103	621,583	654,120	477,506	741,394	693.071	599,204	603,300
Coshocton	274,720	326,836	412.558	247,734	299,789	276.456	290,434	251,767	214,135	192.631
Crawford	868,707	930,760	1,096.031	826,228	1,076,557	799,150	876,416	819,421	809,864	703,046
Cuyahoga	433.796	590,053	540.886	608,013	631,881	531,592	584,538	642,896	573,862	459.889
Darke	1,170,064	1,624,443	1,935.936	650,324	916,847	658.932	154,970	470.379	567,625	628,447
Defiance	962,944	956,898	1,099,256	637,513	1,002,549	637,344	746,344	957,135	630,863	468.003
Delaware	409.393	438,407	467,325	376,035	496,053	320.897	314,030	344.521	356,958	320.801
Erie	534.215	508,520	620.372	486,931	501,151	479,250	564,030	473,071	464.848	463,806
Fairfield	105,899	150.403	241.781	157,227	216,661	186.790	244,771	85,406	77,676	78,083
Fayette	220,020	448.747	583.540	98,763	171,756	124,904	193,449	17,685	30,060	46,186
Franklin	449.013	532,719	690.448	421,819	545,233	347,498	439,224	226,929	265.306	306,703
Fulton	1,014,936	956,272	1,137,696	858,426	1,121.673	778.510	981,196	1,131,937	770,624	563,658
Gallia	36,980	68,039	52,780	38,132	48,793	34,583	24,997	13,971	23.854	41,727
Geauga	473,719	595.157	421,081	513,083	544,777	419,073	530,673	528,497	451,831	423,622
Greene	219,224	401.869	487.888	146,099	295,258	174.826	322.131	76,022	107,115	139,219
Guernsey	146,758	177.845	202.027	118,181	156,327	158.590	140,289	143,307	132,193	137,928
Hamilton	67.366	130,753	116,309	177,195	164.841	73,784	105,361	46,943	45,988	79.636
Hancock	663,618	639.079	1,027,963	418,634	600.466	459.071	652.224	376,222	370.191	352.392
Hardin	612,350	577,257	949.606	485,710	525.958	565,940	512,362	271,438	309.389	329.230
Harrison	206,179	223,409	264.836	161,366	215.798	189,509	183,646	189,021	165,262	170.958
Henry	1,128,440	996.337	1,455,283	694,690	897,276	458,309	662,557	948,238	416.538	352,776
Highland	79.921	170,365	190,146	83,275	156,285	108,162	64.149	21,211	14,254	36.029
Hocking	39.355	58,164	64,811	39,939	66.734	44.254	24,744	17,533	18.303	24.507
Holmes	514,683	657.480	1,014.122	572,156	619,259	508,332	587.906	571,119	416,464	464,954
Huron	932,684	1,023,233	1,203.369	939,569	1,125,441	869.506	1,150,706	947,383	937,284	818,368
Jackson	24,080	30.870	28.638	21,715	30,589	21,950	12,230	4,952	8,053	20.342
Jefferson	304,451	338.220	350,573	282.340	351,516	252,292	338,928	356,377	279,982	300.346
Knox	324,212	323,879	323,874	345,606	382,102	346,639	235,810	331.068	309,216	331,401

Lake	266,169	316,180	326,526	290,652	270,930	236,758	281,204	253,776	214,113	282,175
Lawrence	41,428	92,001	67,614	39,139	42,477	43,720	43,196	27,183	34,878	50,858
Licking	352,637	414,817	492,783	348,527	431,197	296,421	257,580	255,039	312,913	348,096
Logan	684,455	737,048	1,181,388	402,906	535,263	310,092	643,000	176,908	231,957	288,160
Lorain	832,496	835,329	816,949	825,596	878,062	731,616	854,758	806,837	807,259	675.658
Lucas	598,821	589,481	683,699	508,044	582,973	449,543	524,945	641,083	466,114	405.204
Madison	823,710	913,717	1,411,398	776,239	819,462	431,119	494,663	191,784	148,780	202,909
Mahoning	474,232	563,349	586,369	585,144	602.902	416,711	728.821	589,750	507,861	542,087
Marion	872,279	809,535	1,267,793	599,228	916,469	567,606	784,047	496,708	588,409	404,892
Medina	754,072	832,527	829,508	860,545	976,539	766,274	867,890	833,985	804,636	777,848
Meigs	58,855	80,328	61,965	36,557	54,241	41,963	36,015	20,364	46,732	54,595
Mercer	1,137,793	1,186,082	1,164,130	659,469	966,559	747,896	1,330,342	580,336	629,134	605,476
Miami	851,702	1,147,720	1,261,234	602,547	881,127	525,294	954,128	369,129	441,606	522,361
Monroe	148,637	184,027	186,766	139,024	163,794	129,511	129,334	111,545	102,733	122,154
Montgomery	367,250	727,766	810,016	286,054	520,869	380,074	548,282	247,374	313,473	345,303
Morgan	63,915	79,847	105,393	55,393	70,789	56,807	53,987	37,230	42,942	44,898
Morrow	537,036	500,254	672,992	530,865	731,101	537,373	508,643	577,876	541,713	440,993
Muskingum	179,774	210,685	256,102	148,818	198,887	172,403	153,423	112,326	95,445	117,933
Noble	72,331	99.168	108,506	64,919	83,075	69,996	62,481	49,463	59,972	74,511
Ottawa	582,246	432,195	453,961	421,276	411,975	372,055	338,945	123,448	278,361	287,828
Paulding	1,610,414	1,005,850	1,231,422	776,817	970,446	437,028	593,142	882,971	421,621	290,712
Perry	66,286	68,368	96,994	66,394	86,554	66,430	46,010	20,190	24.595	34,665
Pickaway	145,018	233,322	320,093	66,498	89,703	68,674	141,386	15,111	18,707	38.522
Pike	50,482	93,948	98,207	54,473	63,303	47,613	20,672	6,503	8,641	32,709
Portage	638,231	760,382	688,278	793,471	876,080	603,477	679,305	759,979	683,584	702,875
Preble	245,392	519,980	670,320	257,269	341,292	324,380	718,039	181,531	228,781	318,380
Putnam	799,413	798,404	1,029,373	407,647	523,505	268,748	575,788	241,478	203,548	218,534
Richland	862,824	921,616	1,144,392	768,134	957,873	815,646	789,618	833,789	797,594	787,202
Ross	55,491	98,301	114,947	43,009	66,054	47,381	35,242	7,708	15,571	24,821
Sandusky	878,368	924,205	1,127,573	766,800	813,543	696,100	1,098,097	589,622	568,947	568,987
Scioto	61,660	90,562	84,334	47,880	81,110	72,895	59,020	30,801	38,621	65,546
Seneca	865,725	1,013,072	1,332,190	757,267	908,007	711,928	1,013,149	624,614	713,074	592,493
Shelby	984,227	1,074,425	1,348,198	734,809	1,096,416	771,842	1,460,241	500,374	638.123	565,007
Stark	1,107,919	1,220,528	1,261,165	1,092,962	1,377,799	940,832	1,179,203	1,121.658	975,546	1,100,271
Summit	716,528	781,642	639,708	672,890	743,263	603,028	668,969	716,708	716,302	701,253
Trumbull	518,587	734,480	547,910	783,715	846,837	666,050	896,327	748,819	709.482	754,977
Tuscarawas	468.915	521,605	940,594	472,234	572,315	459,194	602.907	568,044	463.146	462,495
Union	591,349	686,740	892,890	413,370	540,240	338,309	349,126	229,269	295,708	331,050
Van Wert	1,010.954	974,281	1,093,015	581,858	719,871	326,147	644,458	532,503	393,048	429,662
Vinton	29,441	34,549	37,190	27,902	44,130	31,502	19,433	9,477	16,559	22,548
Warren	225,157	401,353	404,563	204,297	382,713	245,340	275,215	20,397	135,028	190,654
Washington	161,534	194,788	170,838	122,943	162,785	136,851	145,956	115,701	146,224	154,905
Wayne	1,115,355	1,325,469	1,349,213	1,244,396	1,327,916	1,010,425	1,082,945	1,128,861	926,081	1,029,706
Williams	851,449	939,548	1,048,271	796,137	1,166,895	786,419	951,218	933,170	820,227	664,182
Wood	1,932,485	1,679,132	2,289,932	1,318,483	1,507,749	1,174,448	1,486,936	1,404,129	1,101,267	1,039.803
Wyandot	567,307	698,909	927,655	465,312	602,003	446,181	494,332	369,141	379,102	300,578
Total product	44,179,782	49,731,954	58,312,740	37,305,993	46,789,843	33,936,143	43,193,577	33,296,912	30,694,432	30,563,033
Total area	1,344,247	1,449,112	1,467,052	1,213,228	1,188,947	1,053,876	1,251,248	969,565	976,902	1,052,605

Average area for 10 years, 1,196,678 acres.
Average product for 10 years, 40,800,441 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF CORN IN OHIO FOR TEN YEARS.

Counties.	Bushels (Shelled).									
	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.
Adams	935,319	799,322	833,485	659,528	906,846	598,677	908,020	902,171	1,013,713	937,766
Allen	1,801,800	1,500,787	1,019,187	1,062,426	1,528,880	1,006,162	1,901,497	1,257,240	1,209,899	1,357,388
Ashland	1,083,702	898,728	539,908	889,276	1,019,692	726,991	1,066,801	836,308	968,280	831,350
Ashtabula	473,994	322,716	51,399	389,393	249,949	641,577	586,148	454,599	690,001	448,283
Athens	376,482	353,339	386,926	228,453	493,755	282,080	434,728	449,755	515,325	477,430
Auglaize	2,081,420	1,852,080	1,482,575	1,647,150	1,994,731	1,237,374	2,454,749	1,574,265	1,554,545	1,403,978
Belmont	829,900	786,293	763,644	524,364	876,340	790,647	921,245	895,204	1,064,474	844,974
Brown	1,155,904	1,010,262	1,173,390	965,403	1,284,480	586,177	1,118,755	1,214,197	1,249,513	1,616,065
Butler	2,416,230	2,319,632	1,987,922	1,680,633	2,193,663	1,128,110	2,393,974	2,101,482	2,069,862	1,942,276
Carroll	520,235	452,385	394,549	389,010	459,200	496,543	566,239	391,093	580,806	439,523
Champaign	2,318,982	2,553,673	2,334,679	2,081,850	2,648,546	1,732,881	3,088,845	2,225,267	2,448,256	1,858,336
Clark	2,013,090	1,930,147	2,195,070	1,418,098	2,361,166	1,631,877	2,716,325	2,035,440	2,118,612	2,026,852
Clermont	1,039,256	907,140	776,335	1,188,543	1,054,348	542,678	1,161,680	1,111,813	1,042,754	1,000,661
Clinton	2,736,412	2,723,870	2,375,597	1,443,153	2,692,420	1,645,316	3,275,073	2,555,251	2,453,512	2,280,104
Columbiana	759,798	688,569	427,472	655,691	630,013	633,730	729,665	601,318	800,515	536,015
Coshocton	959,608	894,949	882,280	578,336	983,068	780,966	933,213	773,188	1,119,201	790,637
Crawford	1,522,517	1,282,608	1,105,184	1,427,556	1,428,498	1,133,960	1,529,246	1,345,669	151,134	1,106,100
Cuyahoga	344,375	308,136	128,609	310,128	229,458	351,938	429,792	373,953	468,740	329,851
Darke	4,029,188	3,762,010	3,441,497	3,553,020	4,192,821	2,744,410	5,099,152	3,208,023	3,424,966	3,102,697
Defiance	1,533,195	1,143,221	1,312,452	1,114,482	1,199,386	785,227	1,217,657	1,619,358	1,052,589	916,558
Delaware	1,566,275	1,169,003	1,141,545	1,397,833	1,718,267	966,755	1,616,187	1,540,143	1,522,213	1,449,185
Erie	693,908	560,106	453,398	489,991	548,596	514,501	730,722	649,002	691,450	572,969
Fairfield	2,350,012	2,017,794	2,089,842	2,100,073	2,041,560	2,279,694	2,105,011	2,199,100	2,012,881	1,688,568
Fayette	2,415,335	2,268,980	2,174,930	1,439,774	2,561,635	2,024,855	3,172,320	2,515,635	2,296,045	2,570,879
Franklin	2,475,590	2,102,845	2,251,999	1,722,803	2,848,567	1,338,557	2,891,623	2,305,290	2,332,185	2,523,647
Fulton	1,717,160	1,121,019	1,377,766	1,353,100	1,207,670	1,227,055	1,435,998	1,264,455	1,308,561	920,257
Gallia	675,766	515,120	446,887	387,901	579,839	326,602	557,231	640,882	675,596	616,806
Geauga	348,319	277,600	49,316	259,773	200,538	334,807	390,329	328,128	417,657	330,419
Greene	2,496,490	2,549,852	2,391,445	1,723,825	2,736,452	1,775,441	2,756,056	2,754,575	2,583,818	2,330,046
Guernsey	662,665	531,619	526,788	358,505	553,114	663,010	543,774	606,624	828,388	600,491
Hamilton	660,361	597,263	548,113	578,555	776,821	403,885	711,558	551,100	642,984	725,646
Hancock	2,372,581	1,932,987	1,607,571	1,897,955	2,463,238	1,728,507	2,531,303	2,201,211	1,891,306	1,736,131
Hardin	1,744,353	1,373,642	1,162,337	1,186,468	2,048,464	1,420,324	2,138,105	1,565,667	1,440,005	1,368,508
Harrison	527,852	419,252	360,309	279,852	511,120	480,768	505,580	419,352	646,208	467,615
Henry	2,816,366	1,886,748	2,059,519	2,283,889	2,212,583	1,898,418	2,685,462	2,994,496	2,217,175	2,038,971
Highland	1,713,722	1,841,945	1,783,295	1,066,210	2,016,476	1,214,651	1,793,370	1,763,498	1,661,306	1,691,519
Hocking	435,459	374,701	359,615	309,986	418,146	307,210	469,461	480,428	519,824	445,936
Holmes	975,687	836,100	733,157	746,882	906,335	776,845	901,928	663,754	860,545	705,329
Huron	1,266,722	1,100,079	852,582	977,955	1,034,361	1,012,855	1,346,616	1,266,748	1,223,828	894,766
Jackson	294,271	296,292	261,851	234,165	333,670	311,456	317,238	287,640	432,326	347,166
Jefferson	461,447	411,325	377,123	348,449	467,079	426,500	469,437	469,059	638,230	475,869
Knox	81,620	81,536	81,512	968,379	1,178,641	1,133,055	1,105,868	1,055,800	1,399,337	1,034,932

Lake	249,722	177,910	102,975	167,492	126,553	225,459	277,266	238,540	246,321	250,227
Lawrence	310,210	390,885	296,059	244,571	381,178	334,518	426,642	367,082	466,115	444,250
Licking	1,905,736	1,575,462	1,826,822	1,521,885	1,958,426	1,526.575	1,736.046	1,981,628	2,167,822	1,619,161
Logan	2,287,064	1,883,681	1,765,760	1,444,022	2,193,723	1,223,351	2,421,850	1,753,369	1,713,214	1,606,952
Lorain	927.040	723,060	436,495	607,907	566,510	597,416	772,542	662,442	794,862	568,355
Lucas	1,012,940	706.698	1,057,301	855,166	842,660	814,483	1,014,390	916,422	950,242	696,837
Madison	2,991,910	2,686,415	2,626,487	2,197,225	3,258,880	2,324,405	3,633,960	2,824,597	2,871,614	2,922,451
Mahoning	577,794	450,723	212,568	444,144	416,683	451,832	682,243	547,222	644,468	426,137
Marion	1,949,699	1,758,083	1,631,619	1,455,135	2,016,466	1,229,197	2,209,384	1,794,112	1,825,765	1,451,218
Medina	890.193	724,606	435,209	717,854	719,753	718,489	895,151	692,320	830,655	677,588
Meigs	370,571	382,991	319,618	258,394	489,013	225,928	396,882	561,612	559,523	425,885
Mercer	2,154,719	2,143,040	1,370,035	1,644,644	2,036,252	1,356,306	2,468,881	1,686.532	1,566,649	1,416,796
Miami	2,483,490	2,519,873	2,149,851	1,902,533	2,742,883	1,761.650	2,888,779	2,063,832	2,112,438	1,907,044
Monroe	578,345	549,574	490,920	390,670	649,208	532,871	588,384	598,603	634,108	537,453
Montgomery	1,768.769	2,028,243	1,908,834	1,118,564	2,045,440	1,273,938	2,069.967	1,680,543	1,918,425	1,658,414
Morgan	603,548	586,106	496,704	391,757	590,292	467.950	595,658	627,117	589,811	578,362
Morrow	1,183,180	765,293	770,324	849,314	982,656	771,235	1,102,462	1,109,115	1,239,920	856,196
Muskingum	1,158,392	1,017,795	1,072,461	669,356	1,022,037	841,998	1,073,900	1,049,738	1,175,889	945,800
Noble	621,728	562,786	508,599	414,051	637,844	611,943	566,642	628,768	572,268	613,915
Ottawa	1,211,237	673,584	733,524	878,627	706,809	633,927	819.250	815,567	683.287	813,510
Paulding	2,434.210	1,170,366	2,548,787	2,016,302	2,361,586	1,162,070	1.925,335	2,477,194	1,673,118	1,110,984
Perry	606,138	608,918	611,585	539,028	617,362	473,038	651,005	662,910	668.205	623,430
Pickaway	3,056,315	2,831,153	2,976,494	2,254,422	3,157,955	2,288,445	3,431,553	2,949,668	2,300,028	2,615,699
Pike	848,732	707,458	797,758	521,807	785,848	848,649	796,391	623,679	830,235	737,540
Portage	586,452	441,926	115,182	489,381	388,212	497,464	595,627	445,843	646,067	448,948
Preble	2,607,133	2,605.172	2,064,821	1,560,045	2,502,491	1,537,250	2,793,717	2,116,052	2,020,943	1,884,200
Putnam	3,027,680	2,348,551	1,969,480	2,481.147	3,023.122	1,829,837	3,266,499	2,601.494	2,067,899	2,433,846
Richland	1,372,344	1,023,263	854,279	945,983	1,308,236	1,033,994	1,253,450	1,192,010	1,197,431	977,172
Ross	3,075,678	2,234,839	2,398,009	1,732,452	2,304.574	3,114,693	2,449,357	2,498,190	2,668,608	2,218,451
Sandusky	1,673,076	1,380,767	1,202,653	1,373,728	1,474,840	1,465,867	2,056,915	1,451,885	1,665,140	1,497,865
Scioto	697,136	590,141	667,968	525,367	855,810	640,529	558,771	774,136	826.133	715,199
Seneca	2,224,279	1,837,684	1,673,541	1,657,142	1,801,515	1,682,183	2.228,435	1,731,338	1,856,587	1,420,813
Shelby	2,126,887	1,799,469	1,710,312	1,608,075	2,297,897	1,397,200	2,783,137	1,636,396	1,714,186	1,332,986
Stark	1,394,005	1,056,597	930,229	1,114,138	1,309,470	1,102,941	1,325,034	1,076,804	1,378,993	1,125,604
Summit	803,266	639,273	363,512	566,433	571,458	651,123	743,137	580,650	809,622	614,926
Trumbull	543,637	389,322	70,335	387,613	303.725	544,999	593,774	462,275	593.526	614,520
Tuscarawas	816,109	661,512	647,721	560,288	781,360	721,376	842,961	627,542	898,526	684,775
Union	2,109,584	1,533,050	1,720,799	1,564.359	2,229,616	1,461,727	2,124.346	1,765,009	1,735,316	1,861,126
Van Wert	2,805.200	2,288,658	1,727,400	1,623.894	2,579,998	1,327,475	2,498,029	2,193.660	1,609.615	1,503.679
Vinton	272,202	241,327	212,017	180,093	266,123	234,336	327,684	276,072	343,121	300,466
Warren	1,608,645	1,862,474	1,602,924	1,235.005	1,636,491	1,165,074	1,998,030	1,934.531	1,859,266	1,745,400
Washington	663,319	566,690	554,409	451,393	727,312	484,950	724,457	722,987	799,270	759,702
Wayne	1,690,505	1,370,730	1,005,843	1,326.645	1,712,987	1,146,277	1,587,610	1,428,753	1,581,285	1,346,455
Williams	1,566,271	1,079,472	1,140,030	1,295,270	1,101,575	986,975	1,171,857	1,118.563	1,043,677	776,751
Wood	3,831,656	2,611,830	2,782,206	2,924,860	2,681,169	3,431,449	3,442,570	3,178.841	2,481,132	2,503,655
Wyandot	1,680,670	1,595,485	1,266,134	1,393,352	1,720,919	1,162,347	1,593,714	1,574,785	1,444,258	1,113,728
Total product	127,044,784	108,538,592	100,529,653	92,820,349	122,675,349	92,369,811	143,161,675	115,138,669	114,214,148	103,004,970
Total area	3,011,241	2,865,190	3,066,756	2,945,473	3,160,066	3,079,376	3,361,166	3,025,666	3,057,712	2,999,826

Average area for 10 years, 3,057,247 acres.
Average product for 10 years, 111,949,700 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF MEADOWS IN OHIO FOR TEN YEARS.

Counties.	Tons of Hay.									
	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.
Adams	15,901	10,332	12,855	14,144	11,134	14,221	12,124	10,767	12,169	9,486
Allen	29,422	30,467	26,122	16,948	9,741	17,155	22,709	20,394	26,105	21,497
Ashland	36,012	35,761	37,957	32,308	25,804	20,529	35,550	26,026	32,279	21,597
Ashtabula	64,663	71,745	71,758	66,712	64,312	64,755	55,452	57,306	56,763	50,451
Athens	20,962	17,111	21,493	17,092	16,332	22,759	21,333	17,576	22,122	17,941
Auglaize	17,288	15,234	17,703	11,743	7,490	13,157	15,121	14,891	16,979	16,442
Belmont	37,294	33,518	44,307	39,909	27,668	36,887	40,264	37,050	38,728	28,876
Brown	11,540	15,493	16,559	15,709	11,939	16,583	13,724	14,475	13,710	13,450
Butler	15,583	14,754	16,509	15,354	12,385	15,820	14,641	14,131	15,952	14,096
Carroll	30,084	25,341	33,099	31,885	28,049	35,787	31,184	28,668	29,316	22,602
Champaign	14,726	9,040	14,363	11,743	7,936	12,289	12,583	8,029	14,081	15,566
Clark	20,357	20,243	24,060	24,548	11,926	21,024	16,031	11,951	17,205	18,210
Clermont	15,822	18,632	19,217	17,351	13,433	16,811	16,576	15,535	17,214	14,145
Clinton	17,049	18,742	20,561	19,214	11,182	14,496	15,463	13,342	16,359	11,792
Columbiana	47,145	43,338	57,906	48,999	42,128	117,073	42,608	41,881	46,204	38,475
Coshocton	37,351	30,791	46,788	38,141	31,272	40,894	34,946	27,247	37,051	26,182
Crawford	30,550	26,961	37,322	34,097	21,036	19,814	29,806	31,651	34,516	31,545
Cuyahoga	26,528	29,997	34,051	35,552	35,883	38,673	26,719	29,264	36,317	34,363
Darke	17,144	15,721	20,326	13,000	8,248	12,763	16,295	14,152	19,123	19,420
Defiance	16,368	24,892	27,827	33,935	19,772	22,941	23,065	19,141	21,201	18,613
Delaware	48,894	47,967	47,787	42,161	33,309	42,287	23,883	27,562	38,424	35,558
Erie	9,836	10,079	15,004	9,807	8,386	9,288	11,783	12,301	14,449	11,532
Fairfield	43,500	30,065	54,053	39,809	24,007	40,913	29,509	22,554	29,368	17,466
Fayette	8,617	11,496	13,955	10,700	7,148	44,465	9,745	9,859	12,188	14,149
Franklin	37,997	41,962	43,692	39,045	25,071	12,880	28,419	27,882	31,100	30,987
Fulton	17,307	24,942	27,964	17,387	15,089	18,860	18,058	18,786	24,375	16,721
Gallia	12,952	13,057	15,415	11,365	9,302	11,522	12,336	11,380	12,848	13,312
Geauga	32,828	34,945	37,678	32,523	36,380	35,551	28,431	27,987	30,826	24,807
Greene	16,873	13,261	19,937	15,983	10,836	16,960	15,227	12,491	16,083	17,542
Guernsey	34,560	35,551	42,946	41,393	28,279	44,098	36,210	32,677	36,762	28,969
Hamilton	11,523	12,577	12,585	11,974	11,716	10,336	12,744	13,227	13,351	14,468
Hancock	29,507	30,241	40,158	27,845	12,099	22,951	28,655	31,597	33,407	29,540
Hardin	24,638	16,476	26,175	23,147	10,090	17,161	19,185	24,276	48,355	24,937
Harrison	38,260	36,436	39,988	31,979	30,947	36,817	33,208	34,741	30,569	28,295
Henry	13,448	23,063	21,264	16,414	15,431	17,585	16,538	16,339	15,874	12,077
Highland	17,649	20,266	26,367	20,644	15,355	23,777	18,363	20,724	21,280	15,542
Hocking	14,764	13,069	15,622	14,034	10,903	33,915	11,638	11,117	12,345	8,473
Holmes	23,846	20,153	26,807	27,708	23,056	29,813	28,469	19,237	27,125	20,827
Huron	31,508	34,528	47,866	42,546	27,458	28,502	31,113	34,863	40,775	33,353
Jackson	10,100	11,887	13,702	13,876	9,035	11,181	11,346	10,859	12,029	13,140
Jefferson	31,156	26,937	31,953	31,841	25,496	32,825	31,168	28,448	32,454	26,124
Knox	45,778	45,718	45,515	45,896	29,673	37,816	26,920	28,987	35,557	25,559

Lake	13,664	17,309	18,105	17,390	14,836	18,241	12,647	12,027	12,716	15,412
Lawrence	4,451	4,488	5,435	4,533	7,601	5,034	4,686	4,511	4,813	5,113
Licking	64,346	54,454	67,790	74,794	55,809	70,700	45,663	42,240	55,286	53,755
Logan	19,306	16,039	20,902	18,964	10,321	16,422	17,230	16,241	21,731	18,952
Lorain	42,854	47,824	57,623	50,740	47,155	42,217	41,010	44,487	49,466	37,790
Lucas	13,337	16,699	17.744	15,721	11,841	13,600	12,828	11,514	14,296	13,968
Madison	10,738	13,901	15,774	17,883	8,140	17,207	9,766	8,592	14,568	16,809
Mahoning	42,278	44,365	50,582	45,502	40,502	36,330	31,246	24,758	41,087	20,601
Marion	23,778	19,745	24,731	22,578	11,126	16,096	17,411	20,827	26,329	21,276
Medina	33,042	33,944	40,161	39,959	33,248	27,723	27,525	28,514	38,250	25,434
Meigs	18,266	16,235	18,312	15,215	13,476	17,147	15,847	10,242	16,659	14,717
Mercer	16,970	18,506	21.541	14,104	8,884	14,646	19,622	18.928	20,586	20,251
Miami	11,759	8,487	11,416	9,402	6,919	7,573	9,141	7,556	19,939	11,442
Monroe	28.600	24,312	30,698	28,280	16,937	28,182	29,126	31,154	26,592	18,950
Montgomery	19,545	17,102	21,729	17,365	10,425	17,651	13,859	14,435	16,307	15,132
Morgan	29,332	27,501	29,706	26,218	20,763	31,152	28,270	22,316	26,956	19,905
Morrow	41,812	32,884	41,284	36,052	23,606	29,538	21,759	26,962	41,133	31,227
Muskingum	46,195	41,422	50,750	44,415	37,703	53,174	46,013	34,990	44,901	32.823
Noble	29,909	29,969	36,160	31,671	22,276	30,508	26,821	21,708	26,720	23,465
Ottawa	16,260	18,465	19.664	21,014	14,824	16,062	12,817	14,697	16,387	11,232
Paulding	17,768	23,205	26,291	21,523	16,529	18,871	23,224	14,684	17,095	12,360½
Perry	25,051	21,355	29,351	26,678	19,557	31,061	24,870	18,210	22,950	17,460
Pickaway	15,018	12,688	14,852	12,987	6,814	17,357	12,635	9,983	12,640	10,807
Pike	8,165	7,791	8,190	9,510	4,463	6,074	5,215	5,306	5,054	3,615
Portage	35,771	33,521	43,434	37,872	39,029	36,363	27,044	33,559	32,971	21,124
Preble	8,858	5,501	8.188	7,403	4,875	7,899	7,601	7,581	9,917	10.509
Putnam	21,282	25.451	29,999	20.855	15,761	17,705	22,847	19,613	18,163	18,105
Richland	30,966	27,252	36,966	33,675	27,641	30,086	28,906	26,464	36,086	27,010
Ross	13,868	13,480	14,757	12,266	8,187	14,795	13,190	10,354	12,162	11,204
Sandusky	17,588	18,368	25,874	27,116	17,834	23,347	20,848	18,415	22,540	20.585
Scioto	7,981	9,368	12,009	9,190	9,125	9,886	8,891	9,649	9,046	9,310
Seneca	29.186	26,692	40.812	28,506	15,122	21,317	25,064	29,643	29,520	23,836
Shelby	10,783	9,063	14,731	9,084	6,750	9,602	11,298	10,392	14,995	11,252
Stark	54,180	49,263	64,724	52,959	52,701	55,101	42,472	51,927	56,360	45.563
Summit	30,405	26,814	34,109	31,391	32,178	33,080	25,377	29,509	31,020	26,815
Trumbull	58,803	62,744	73.132	63,919	61,764	60,832	55,462	61,407	61,081	43.870
Tuscarawas	45,418	41,613	48,864	45.015	54,750	49,832	47,264	55,817	46,155	35.951
Union	28.537	23,595	28.938	27,293	13,084	22,183	16,003	19,436	28,344	25.456
Van Wert	24,567	25,799	37,455	29,386	22,807	30,839	28,116	24,716	28,592	25,956
Vinton	10.983	11,600	12,179	12,939	9,049	11,012	10,271	8,751	11,099	11,513
Warren	16,016	16,661	21,216	19,465	13,229	17,383	16,586	16,120	16.129	14,488
Washington	17.154	31,463	31,696	29,683	25,516	32,045	33,392	25,709	34,991	24.427
Wayne	46,902	42,589	57,629	40,724	42,571	49,134	41,313	41,649	47,541	32,591
Williams	26,885	31,751	37.944	33,541	30,178	25,230	20,518	28,843	30,958	28.586
Wood	20,501	28,686	34,775	34,181	24,950	28,272	23,588	23,121	33,997	28,847
Wyandot	27,990	29,268	30,154	35,450	15,180	16,926	20,583	23,731	26,922	26,371½
Total product	2,254,398	2,222,021	2,685,592	2,370,842	1,844,892	2,339,399	2,034,980	1,972,659	2,323,978	1,903,963
Total area	2,124,791	1,871,290	2,290,354	1,975,387	1,658,397	1,960,476	2,072,781	1,776,075	2,001,111	1,661,038

Average area for 10 years, 1,939,170 acres.
Average product for 10 years, 2,195,272 tons.

COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER IN OHIO FOR TEN YEARS.

Counties.	Tons of Hay.									
	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.
Adams	1,618	5,491	3,241	5,350	5,399	752	1,609	4,963	2,731	7,425
Allen	4,395	15,409	12,292	22,222	21,341	26,026	798	15,684	8,868	18,057
Ashland	11,484	18,873	12,102	19,121	21,039	38,940	10,692	16,998	13,340	32,459
Ashtabula	680	3,573	1,095	1,747	2,195	3,760	1,839	2,785	3,384	6,780
Athens	377	1,461	1,241	1,930	2,813	223	497	2,253	880	2,450
Auglaize	4,432	20,381	16,756	22,098	16,683	16,873	934	12,062	8,468	15,585
Belmont	1,226	6,376	1,368	1,807	5,142	413	960	6,372	1,899	12,919
Brown	258	1,753	1,997	2,623	6,356	778	1,941	1,432	1,041	2,351
Butler	5,815	17,578	14,389	18,915	15,740	12,342	10,382	12,847	9,859	17,278
Carroll	3,832	6,202	1,208	894	2,555	886	426	3,984	2,575	8,457
Champaign	6,185	23,863	14,246	18,031	18,297	16,957	912	20,244	13,762	24,238
Clark	3,407	19,804	9,449	9,320	14,783	12,557	1,662	12,211	10,553	21,675
Clermont	1,285	4,290	3,443	5,161	4,174	2,041	2,023	3,038	2,326	4,333
Clinton	3,073	12,592	5,770	9,152	8,253	6,073	4,385	8,415	5,249	18,334
Columbiana	4,905	10,317	5,101	3,842	7,737	7,439	4,543	8,931	2,163	14,857
Coshocton	7,649	12,240	3,823	4,269	8,791	3,089	1,773	8,791	3,122	10,478
Crawford	11,197	25,723	14,340	19,273	22,461	33,516	6,289	14,857	11,323	22,271
Cuyahoga	808	2,675	1,088	2,178	2,472	4,291	1,858	3,432	1,549	4,419
Darke	11,572	39,947	31,721	35,011	30,979	33,101	2,982	26,603	21,540	30,699
Defiance	3,688	22,309	4,893	22,627	19,079	23,334	12,688	5,191	8,747	23,093
Delaware	2,406	14,953	8,336	10,700	18,875	12,607	1,757	10,641	4,947	21,587
Erie	3,270	9,178	3,638	7,827	7,571	11,061	3,633	5,985	4,837	10,397
Fairfield	5,610	26,758	12,848	13,776	17,644	13,880	7,566	16,816	7,879	22,390
Fayette	2,130	11,274	8,037	9,830	6,438	5,215	2,115	4,069	2,409	10,305
Franklin	2,391	16,368	8,868	9,221	12,555	8,401	3,466	9,538	5,124	19,196
Fulton	9,636	21,885	1,245	23,772	21,345	20,536	13,462	2,414	9,374	18,917
Gallia	428	2,119	1,053	2,339	2,303	237	578	1,823	1,127	2,892
Geauga	1,716	3,330	722	1,596	2,739	4,408	2,704	2,792	2,710	9,155
Greene	3,381	18,079	10,732	13,139	13,503	11,366	6,742	9,450	6,731	18,796
Guernsey	545	4,459	497	1,080	2,442	829	618	3,788	1,202	5,024
Hamilton	2,201	5,879	5,610	6,182	6,096	6,006	4,476	4,923	5,578	5,088
Hancock	6,502	25,868	17,881	27,826	34,324	33,270	2,807	14,161	19,003	32,576
Hardin	3,942	20,048	12,259	14,376	20,554	21,154	945	12,864	10,249	21,494
Harrison	914	2,534	549	1,581	1,685	393	645	2,648	2,682	5,878
Henry	3,138	15,695	4,945	20,669	15,233	14,558	9,884	2,697	9,331	17,744
Highland	2,165	9,801	6,795	11,038	7,623	3,015	3,238	5,372	3,071	13,825
Hocking	750	4,189	2,105	3,204	2,011	551	808	3,240	1,652	3,720
Holmes	14,827	17,032	8,663	8,303	1,038	9,200	4,145	10,093	4,179	15,490
Huron	17,160	28,152	14,947	19,801	22,549	37,265	13,131	15,607	10,359	26,941
Jackson	32	212	104	219	291	25	226	401	227	1,053
Jefferson	2,924	6,701	2,165	1,158	5,800	1,065	1,882	6,247	1,789	9,917
Knox	6,973	6,950	6,916	6,870	11,281	13,535	6,080	16,118	8,189	20,210

Lake	376	1,056	291	945	1,171	1,477	1,187	1,491	764	1,731
Lawrence	168	708	767	758	822	262	560	1,025	458	1,082
Licking	5,977	20,250	9,837	6,583	14,860	10,371	6,941	15,430	6,177	15,314
Logan	7,978	25,748	15,474	23,448	21,979	24,102	486	17,563	12,045	26,675
Lorain	9,795	14,312	5,858	8,872	10,598	16,911	7,286	6,984	3,856	14,396
Lucas	2,729	5,017	946	5,236	6,021	7,490	5,450	1,713	5,250	10,200
Madison	4,679	18,922	11,880	12,827	8,912	8,213	1,891	9,224	4,812	5,220
Mahoning	2,371	7,640	3,037	4,114	8,250	6,966	5,337	9,144	4,404	19,323
Marion	8,930	22,995	14,062	15,339	18,968	22,019	2,217	10,915	9,745	26,352
Medina	11,942	21,170	11,856	23,684	16,297	26,006	8,475	15.203	8,723	23,509
Meigs	409	1,772	1,035	2,934	3,237	356	892	2,181	1,067	3,555
Mercer	7,857	27,121	23,533	25,956	22,965	24,010	1,741	16,166	7,502	14,941
Miami	4,730	24,505	16,296	14,888	14,156	18,484	2,827	12,090	10,766	18,894
Monroe	604	2,163	487	583	1,663	142	203	3,559	634	6,285
Montgomery	4,197	17,635	14,984	15,490	14,411	13,631	4,932	14.978	12,192	22,432
Morgan	1,210	4,314	2,064	2,709	5,311	433	803	5,178	1,832	8,828
Morrow	8,236	20,440	11,247	15,360	24,695	25,483	4,586	13,825	6,063	21.713
Muskingum	2,708	9,878	2,552	3,792	7,838	1,787	1,846	6,696	2,712	9,283
Noble	1,032	4,190	881	1,103	3,039	301	287	2,140	1,081	5,352
Ottawa	3,716	6,194	4,296	7,798	10;639	13,641	5,308	2,643	5,601	13,286
Paulding	2,854	17,059	5,548	16,610	8,540	13,308	4.311	1,773	3,632	7,463
Perry	6,135	12,115	3,850	4,981	6,766	1,842	2,664	8,110	4,545	8,035
Pickaway	3,657	13,000	9,791	11,674	9,061	5,990	5,341	9,188	5,434	18,997
Pike	1,376	7,073	2,507	3,524	2,616	1,155	2,032	3,177	2,366	3,677
Portage	5,315	11,270	3,765	7,326	7,310	7,625	3.456	11,953	4,945	18.869
Preble	7.476	17,027	18,940	19,013	15,244	13,628	8,521	11,597	10,045	22,081
Putnam	6,302	19,931	9,007	22,766	19,201	22,962	2,115	6,697	13,955	19,852
Richland	18,534	27,759	18,172	18,737	19,239	28,122	8,576	19,387	13,068	34,156
Ross	1,483	8,698	6,728	11,009	8,022	2,822	3,922	7,649	4,793	11.076
Sandusky	4,894	17,670	4,046	13,251	14,255	19,473	7,582	10,064	10,877	21,271
Scioto	703	1,833	1.393	2,051	2,594	476	2.461	2,601	2,161	3.389
Seneca	11,479	32,546	20,729	30,897	35,139	41,593	10,960	20,941	21,565	38,937
Shelby	3,403	19,530	18.838	20,150	18,684	17,298	390	12.637	9,939	18.195
Stark	11,947	20.562	8,971	12,604	15,008	13,845	9,501	18,002	4,291	23,112
Summit	6,843	13,946	4,785	6,357	5,991	6.421	3,139	6,150	5,093	17,263
Trumbull	466	2,768	520	2,145	3,378	3,724	1,926	5,017	3,284	14,471
Tuscarawas	5,164	9,741	2,405	2,374	4,226	2,245	852	4,659	1,117	10,735
Union	7,024	29,994	15,548	19,098	23,326	25,790	698	13,979	5,075	19,541
Van Wert	3,414	26,431	8,627	21,072	18,465	19,600	3,900	6,722	8,881	13,215
Vinton	136	442	347	440	491	105	168	1,068	510	1,915
Warren	2,371	11,127	7,247	9,771	9,246	7,525	6,461	8,522	5,266	16,740
Washington	1,199	2,052	852	2,490	3,263	346	757	2,444	1,433	10.806
Wayne	24,725	37,076	19,400	21,882	21,405	23,939	13.592	21.305	15,416	41,009
Williams	7,847	24,352	3,659	22,713	19,588	28,827	19,685	4,744	10,550	21.358
Wood	5,115	18,593	5,999	18,957	17.070	20.979	9,877	7,463	8,382	19,424
Wyandot	5,074	18,459	15,462	18,131	23,457	27,771	5,725	20,418	13,686	17,888
Total product	425,507	1,219,405	666,997	972,580	1,026,948	1.051,464	361,980	749,225	552,021	1,336,599

Average product for 10 years, 836,272 tons.

COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER SEED IN OHIO FOR TEN YEARS.

Counties.	Bushels of Seed.									
	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.
Adams	583	1,459	2,259	2,535	7,805	82	966	3,768	793	10,004
Allen	2,549	3,403	2,175	5,825	7,831	12,824	200	4,930	1,045	18,999
Ashland	1,764	2,277	2,339	4,646	4,111	6,733	2,084	4,689	989	17,618¾
Ashtabula	56	131	....	68	138	416	38	77	41	2,268
Athens	9	59	28	62	174	....	....	191	21	191
Auglaize	2,748	6,065	6,943	9,397	14,560	7,673	370	7,296	1,340	13,702
Belmont	60	1,384	165	192	1,710	6	260	2,947	44	8,125
Brown	230	569	837	388	2,639	238	645	920	143	2,798
Butler	2,081	2,311	4,613	5,298	7,948	2,775	3,842	6,520	570	12,466
Carroll	1,273	2,619	256	495	1,318	151	66	773	993	6,038
Champaign	2,340	4,903	6,682	7,410	9,319	7,280	272	8,374	1,980	20,524
Clark	483	3,722	5,498	3,614	3,381	7,737	1,035	8,969	1,244	13,109
Clermont	151	311	451	453	1,371	214	219	890	39	1,578
Clinton	702	3,648	3,681	5,260	2,601	3,964	4,116	7,929	1,256	11,976
Columbiana	383	1,616	190	467	935	351	277	601	21	6,541
Coshocton	2,573	4,024	1,495	1,619	5,656	579	621	5,211	367	10,758
Crawford	2,693	4,626	3,843	8,300	6,031	13,000	2,144	5,105	1,958	20,605
Cuyahoga	....	47	....	60	21	305	3	112	15	1,344
Darke	4,514	6,399	11,834	12,936	18,783	14,504	930	17,105	4,788	27,478
Defiance	5,865	8,061	4,348	12,594	6,578	20,559	18,066	4,419	5,030	18,253
Delaware	474	1,826	1,811	2,772	4,911	3,800	417	2,428	220	8,133
Erie	130	1,231	479	1,564	1,461	2,528	811	1,434	506	9,414
Fairfield	1,542	9,080	7,204	6,725	11,544	6,410	7,507	17,068	1,211	19,902
Fayette	599	3,489	5,032	5,499	3,212	4,169	2,690	4,660	249	11,947
Franklin	213	5,133	4,508	3,480	4,310	4,001	2,507	7,815	419	16,952
Fulton	5,118	6,188	744	6,171	3,762	8,848	11,169	693	2,860	17,549
Gallia	....	31	40	165	279	16	101	224	122	817
Geauga	7	145	5	17	46	20	65	28	50	1,749
Greene	991	4,773	7,026	5,794	8,182	7,649	6,261	11,152	1,545	15,318
Guernsey	34	803	32	401	1,089	8	41	1,102	136	3,182
Hancock	172	437	1,344	1,712	1,537	1,481	1,364	1,145	230	2,154
Hamilton	2,803	4,201	5,248	8,528	11,887	18,733	2,127	4,489	3,584	27,923
Hardin	1,501	3,983	4,293	5,875	8,710	14,210	418	3,830	1,233	14,793
Harrison	158	1,071	71	143	804	87	217	1,270	2,627	5,829
Henry	6,929	8,375	3,588	12,006	7,711	12,830	10,794	2,161	4,831	20,098
Highland	1,424	4,861	9,240	6,636	10,308	1,609	3,592	6,753	545	18,006
Hocking	198	1,067	580	637	2,390	73	283	2,293	167	2,946
Holmes	4,571	5,325	2,927	3,322	5,612	3,171	1,520	5,806	1,112	12,337
Huron	1,534	4,347	2,537	5,253	4,049	12,333	4,781	3,586	1,910	22,836
Jackson	....	....	....	15	15	....	....	42	....	160

Jefferson	558	2,652	359	198	1,680	136	364	3,002	61	8,979
Knox	1,982	1,939	1,911	2,365	4,487	3,786	1,526	8,533	836	17,008
Lake	3	104	59	84	13	69	74	53	48	1,045
Lawrence	5	39	37	9	47	17	30	56	33	254
Licking	1,426	5,257	4,038	2,798	6,490	491	3,492	10,107	1,736	17,562
Logan	3,436	5,623	5,894	10,338	15,994	8,388	75	7,629	1,079	16,205
Lorain	70	379	89	885	798	2,591	579	494	197	6,741
Lucas	2,166	2,206	589	2,506	3,513	5,261	5,013	735	1,582	10,172
Madison	1,245	5,992	7,843	5,097	3,870	5,240	876	4,298	224	7,895
Mahoning	99	352	78	325	270	318	252	535	120	7,760
Marion	3,678	3,352	4,640	5,447	4,016	10,963	854	2.067	1,153	14,073
Medina	405	1,782	883	3,949	2,074	5,152	1,760	2,654	1,020	13,965
Meigs	1	52	138	70	313	77	37	183	37	444
Mercer	7,482	9,722	9,093	12,820	22,112	17,208	1,620	12,544	2,004	15,465
Miami	982	2,605	4,752	4,853	6,492	10,114	1,359	8,964	1,832	13,611
Monroe	192	935	139	145	1,170	24	42	1,911	82	5,574
Montgomery	1,491	3,369	6,234	3,899	6,022	6,572	1,310	767	1,547	16,286
Morgan	93	654	227	214	2,467	3	122	1,954	44	5,269
Morrow	2,577	2,296	1,970	3,879	3,218	7,956	1,263	1,666	561	17,085
Muskingum	244	1,799	154	448	3,989	80	387	2,677	114	6,170
Noble	204	712	55	128	1,534	15	32	740	44	2,451
Ottawa	1,785	889	748	1,365	1,160	4,081	2,786	683	840	8,748
Paulding	4,780	2,668	2,226	6,851	3,529	12,477	5,244	1,376	1,733	9,528½
Perry	2,040	5,055	2,026	1,603	5,430	819	1,785	6,110	980	9,933
Pickaway	1,670	5,544	8,590	8,228	7,570	4,401	6,991	12,256	1,025	15,320
Pike	667	527	2,433	1,380	3,303	137	1,476	2,265	300	3,590
Portage	477	840	414	1,188	677	833	257	1,844	176	10,644
Preble	2,143	3,041	5,961	7,579	7,747	3,560	3,147	6,640	1,255	14.593
Putnam	7,003	6,110	3,644	9,834	8,152	18,065	1,742	4,396	1,199	33,306
Richland	2,903	3,352	2,496	6,631	4,429	10,137	1,370	5,294	903	32,190
Ross	769	3,520	5,828	6,650	11,133	1,827	4,344	11,191	1,240	16,134
Sandusky	1,554	4,658	1,611	2,385	3,776	9,462	4,535	3,436	2,134	20,430
Scioto	20	70	252	410	1,152	32	264	738	334	1,691
Seneca	4,209	11,167	8,444	1,018	11,714	19,605	7,990	8,683	3,006	34,620
Shelby	2,092	5,533	10,635	10,948	17,545	9,181	96	6,342	1,377	17,033
Stark	1,850	1,645	1,017	2.438	2,517	1,821	839	3,553	153	12,609
Summit	414	765	240	1,223	635	932	149	597	121	7,440
Trumbull	13	232	17	122	101	60	39	229	38	4,408
Tuscarawas	2,128	3,457	805	726	3,084	504	297	2,534	76	9,105
Union	1,172	2,745	3,442	4,154	6,873	8.441	168	3,112	343	7,747
Van Wert	2,923	4,259	2,701	6,371	4,514	10,257	2,243	3,694	1,165	10,959
Vinton	75	37	79	86	361	8	258	330	9	552
Warren	190	1,160	1,706	2,064	3,512	1,141	1,128	4,952	277	9,560
Washington	228	484	118	243	1,849	....	60	721	44	6,597
Wayne	2,690	3,141	2,776	4,948	5,538	6,059	1,939	4,454	1,211	17,741
Williams	6,483	9,075	2,489	13.813	8,710	20,865	18,723	2,880	6,322	17,736
Wood	5,229	6,116	2,172	6,149	4,109	15,411	9,859	4,080	2,086	21,372
Wyandot	2,434	4,928	5,070	8,154	6,537	12,976	2,367	7,983	1,906	18,510
Total product	145,735	266,240	241,514	335,272	420,985	462,010	195,972	350,777	90,841	1,032,531

Average product for 10 years, 354,188 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF IRISH POTATOES IN OHIO FOR TEN YEARS.

Counties.	Number of Bushels.									
	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.
Adams	21,568	16,301	28,591	18,814	23,524	14,688	22,263	13,701	18,323	14,339
Allen	66,441	55,789	63,492	43,545	79,705	35,050	54,096	51,029	44,459	23,188
Ashland	141,591	94,595	83,163	91,416	111,043	45,538	94,254	93,509	88,345	62,779
Ashtabula	435,815	306,568	340,247	207,207	204,586	447,711	403,128	236,789	400,765	244,397
Athens	44,530	43,975	46,527	19,399	33,860	19,397	21,779	33,665	32,445	25,399
Auglaize	67,988	72,816	67,492	71,778	107,039	54,071	66,881	45,914	45,952	25,304
Belmont	111,574	123,529	131,524	97,509	105,387	63,129	73,542	90,658	57,129	58,726
Brown	35,190	35,989	34,910	19,874	33,832	14,935	28,296	24,745	38,652	29,013
Butler	116,107	134,939	98,665	72,445	89,490	46,646	90,998	63,276	75,759	63,323
Carroll	86,753	61,187	64,487	42,132	51,167	35,962	61,582	63,610	58,008	54,195
Champaign	43,645	37,805	46,953	23,795	48,408	26,442	35,898	27,485	41,915	21,208
Clark	82,191	76,352	85,509	46,884	73,994	34,238	51,175	49,355	54,574	41,529
Clermont	76,440	76,138	65,475	54,149	75,403	37,657	78,492	69,744	56,034	62,456
Clinton	33,596	24,949	20,726	18,462	34,737	17,544	36,005	37,002	40,297	27,325
Columbiana	281,376	221,401	233,889	201,655	350,709	153,461	181,330	184,534	185,576	149,302
Coshocton	143,738	116,030	93,361	80,089	105,193	61,060	65,112	85,070	71,941	65,896
Crawford	172,067	130,104	143,150	138,725	162,589	91,745	126,445	109,739	123,988	73,451
Cuyahoga	675,134	601,099	605,801	641,831	467,748	704,867	603,554	551,647	743,559	543,867
Darke	74,437	96,359	143,318	85,186	130,244	59,939	120,118	90,034	100,463	59,242
Defiance	81,315	73,380	112,841	79,895	92,443	51,003	122,284	108,318	72,774	51,514
Delaware	64,521	55,009	45,978	34,150	53,105	27,010	23,905	31,619	33,351	20,734
Erie	403,075	315,409	355,010	275,980	263,407	301,553	384,356	263,408	312,730	248,383
Fairfield	92,933	91,575	110,019	98,258	104,047	45,467	67,997	84,054	71,746	54,052
Fayette	535	1,410	13,143	2,832	7,280	3,009	3,728	6,651	6,011	10,757
Franklin	208,759	249,705	271,212	155,867	125,206	88,660	68,865	67,766	82,204	75,691
Fulton	108,998	74,389	159,291	102,158	97,312	71,490	191,289	131,068	140,271	88,576
Gallia	27,635	23,153	26,372	15,399	21,493	7,668	17,691	15,205	13,015	19,898
Geauga	374,696	254,350	234,978	187,475	163,721	279,816	293,792	228,170	314,719	225,630
Greene	80,510	83,716	73,965	39,612	63,389	28,508	65,289	51,225	65,063	48,760
Guernsey	62,976	66,849	56,947	43,537	52,955	32,237	29,467	42,216	33,423	33,776
Hamilton	483,697	402,830	364,966	367,060	370,796	195,762	306,568	263,909	202,669	261,545
Hancock	80,904	57,600	81,234	90,660	121,361	84,053	113,617	88,728	80,959	52,139
Hardin	104,832	83,464	60,767	144,427	167,685	66,170	566,621	70,502	98,941	47,392
Harrison	30,181	26,492	31,105	19,206	24,353	18,143	29,484	32,977	27,647	30,256
Henry	73,737	55,195	103,683	70,510	84,677	44,727	111,838	100,657	87,715	64,213
Highland	14,824	17,046	29,984	12,636	23,470	11,245	22,616	20,043	21,862	17,477
Hocking	59,831	57,757	61,362	46,804	66,475	27,915	41,777	54,579	35,481	38,270
Holmes	72,149	59,006	72,586	66,979	84,198	51,699	68,163	79,833	82,123	54,493
Huron	143,076	122,472	125,736	133,374	123,676	114,198	183,712	96,619	170,493	92,544
Jackson	14,120	14,350	21,035	19,378	19,730	10,268	11,752	17,637	11,083	13,791
Jefferson	96,931	91,050	75,811	54,933	71,252	41,311	50,770	58,241	46,224	57,466
Knox	43,378	43,326	43,111	44,372	55,976	27,607	31,611	44,286	55,770	39,236

Lake	186,942	164,945	181,996	151,291	106,220	187,156	183,174	155,542	208,869	166,067
Lawrence	36,520	41,238	38,705	27,739	36,959	18,185	35,636	20,039	17,874	18,633
Licking	175,259	128,473	152,471	100,559	115,380	79,272	80,109	106,814	81,105	69,427
Logan	51,314	38,525	47,748	32,931	49,591	26,050	35,180	25,702	37,856	22,955
Lorain	319,405	264,288	222,569	214,945	198,969	219,306	273,390	186,144	234,986	178,502
Lucas	324,558	238,499	450,230	271,991	296,545	277,480	429,830	280,703	343,516	251,471
Madison	25,510	23,918	28,788	12,743	15,091	9,422	10,879	15,586	15,356	13,372
Mahoning	301,545	234,002	247,878	325,131	209,642	167,348	201,250	172,425	197,760	133,950
Marion	87,981	74,102	76,563	53,373	94,012	46,019	67,496	58,589	57,598	35,823
Medina	435,084	305,470	309,560	299,437	208,279	231,926	299,735	216,759	245,032	178,142
Meigs	65,465	54,519	65,263	44,730	64,462	25,532	60,850	42,305	54,839	52,378
Mercer	61,563	54,043	64,505	52,150	84,502	47,196	42,274	31,835	32,896	23,317
Miami	94,104	109,613	120,976	52,816	98,830	49,722	87,070	71,413	66,449	45,426
Monroe	128,699	138,681	150,200	114,965	139,953	93,139	129,325	121,005	85,368	81,186
Montgomery	88,180	130,011	126,412	59,761	100,646	45,483	77,181	72,305	93,107	58,772
Morgan	46,498	55,555	51,403	37,339	52,420	27,649	26,982	38,204	29,746	29,608
Morrow	128,417	68,605	96,175	85,524	110,956	48,820	68,807	82,940	59,178	55,672
Muskingum	124,174	199,167	116,845	92,066	97,350	46,938	54,750	67,285	50,667	57,078
Noble	68,787	69,905	72,237	59,902	79,589	51,792	33,350	52,563	40,685	35,949
Ottawa	48,186	37,535	63,948	118,935	50,931	35,316	48,677	34,506	36,360	33,258
Paulding	28,830	22,028	55,952	42,460	47,156	30,577	61,103	155,748	31,663	18,171
Perry	64,879	58,472	68,585	41,141	56,666	32,096	42,467	57,580	41,315	41,625
Pickaway	34,020	35,845	32,243	33,629	41,371	20,013	45,968	36,346	30,884	24,299
Pike	74,931	38,246	57,935	35,168	66,428	27,714	33,698	31,765	21,104	29,530
Portage	940,496	623,024	765,851	690,889	601,581	714,431	813,049	712,378	775,471	473,724
Preble	26,345	32,332	51,950	23,067	40,049	22,611	50,707	40,572	53,154	31,611
Putnam	91,375	49,930	87,891	88,075	124,854	63,048	128,987	74,619	80,482	48,615
Richland	214,969	163,145	186,016	162,370	186,386	130,446	186,587	161,448	225,483	113,671
Ross	97,527	83,028	87,431	59,262	76,828	39,946	44,234	48,194	38,889	42,483
Sandusky	250,988	218,237	219,977	213,943	170,052	170,312	245,891	162,899	200,687	140,743
Scioto	125,605	100,253	119,130	81,797	101,580	65,646	75,337	81,045	67,273	58,348
Seneca	209,684	178,487	196,754	150,480	154,878	123,574	175,008	113,655	155,098	82,232
Shelby	47,314	41,812	65,982	44,376	85,035	37,952	57,393	36,202	41,111	25,364
Stark	586,243	338,903	407,912	361,289	404,152	267,908	382,709	314,916	415,051	258,558
Summit	556,923	354,881	338,880	309,805	244,840	266,166	327,643	239,935	349,608	215,308
Trumbull	387,126	287,592	326,023	287,837	222,976	333,400	362,689	318,782	351,131	207,751
Tuscarawas	216,746	245,152	175,772	145,104	188,196	102,261	127,563	139,306	160,579	144,449
Union	25,393	21,491	29,040	14,576	26,646	8,960	6,716	10,572	12,844	12,092
Van Wert	63,603	61,528	55,778	41,852	80,840	39,674	94,011	60,440	43,550	25,393
Vinton	24,765	18,934	18,885	22,139	33,144	13,344	15,440	21,052	23,728	22,446
Warren	15,537	32,863	32,547	24,487	27,175	18,529	33,517	25,520	42,321	36,788
Washington	191,621	192,116	202,615	143,250	140,752	91,820	142,099	122,314	109,693	103,866
Wayne	885,520	495,229	500,178	439,791	385,049	189,821	298,606	241,197	234,325	150,250
Williams	76,502	53,709	102,841	75,025	81,006	41,434	93,283	112,681	86,237	44,184
Wood	94,342	79,014	135,547	119,026	78,592	79,796	133,774	94,274	104,640	70,222
Wyandot	51,915	54,993	63,472	57,980	84,962	34,398	66,627	57,312	67,397	32,361½
Total product	13,615,184	10,957,796	11,998,075	9,997,543	10,507,822	8,296,236	11,313,191	9,203,633	10,097,418	7,286,582
Total area	126,683	131,338	124,826	109,811	113,064	115,600	131,234	118,584	118,165	114,832

Average area for 10 years, 120,413 acres.
Average product for 10 years, 10,327,347 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF TOBACCO IN OHIO FOR TEN YEARS.

Counties.	Pounds of Tobacco.									
	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.
Adams	3,173,664	2,822,122	2,604,520	1,681,840	2,465,940	2,217,898	2,718,872	2,131,862	1,828,170	786,098
Allen	....	....	....	....	....	....	....	....	40	520
Ashland	....	....	....	....	....	....	1,400	....	1,400	2,995
Ashtabula	204	....	....	....	....	....	....	....	....	....
Athens	....	....	....	....	....	....	5,720	2,600	10,300	3,700
Auglaize	9,050	3,000	....	3,800	8,390	12,000	21.200	11,550	30,860	4,100
Belmont	1,020,054	1,343.499	875,315	823,282	1,055,562	824.509	762.940	704,452	1,289,763	1,226,297
Brown	4,533,217	3,920.895	4.619.448	4,237,990	4,527,058	5,098,122	4,774,309	4,534,061	3,300.029	2,008,930
Butler	1,548,480	1,227,730	1,058,770	735,100	422,430	710,875	713,800	1,029,585	1,035,965	531,662
Carroll	....	....	....	....	....	....	....	....	....	....
Champaign	61.100	36,922	35,290	33.400	52,780	52,190	115,240	55,262	98,080	19.100
Clark	187.476	121,622	199.000	113.450	232,880	185,635	265,860	222,335	251,060	150,260
Clermont	2,177,557	1,950.645	1,998.301	1,897.956	2,056,776	2,335,483	2,984,595	2,476,932	1,597,850	991,950
Clinton	7,000	10,400	9,900	17,700	18,450	57,900	73,040	74,624	102,546	23,590
Columbiana	....	....	....	....	....	....	....	....	....	....
Coshocton	100	....	....	1,000	1,500	1,500	....	....	10	....
Crawford	....	....	....	....	....	....	....	....	....	....
Cuyahoga	....	1,000	....	....	8.200	....	....	....	....	....
Darke	15,370,410	11,809.097	9,301,531	8,712,814	10,279,035	8,310,165	11,106,872	10,451.175	10,270,356	5,768.440
Defiance	....	....	....	1,500	500	1,500	1,320	3,950	5,650	3,600
Delaware	....	....	....	....	....	....	....	....	100	....
Erie	....	....	....	....	....	....	....	....	....	80
Fairfield	....	....	....	....	....	....	....	....	....	....
Fayette	....	....	....	....	....	....	500	....	45	....
Franklin	....	....	....	30,000	1,100	....	5,000	....	20	....
Fulton	3,000	51	700	....	....	....	....	....	....	....
Gallia	400,208	662,790	366,520	360,160	436,766	415,228	700,992	721,720	890,582	235,955
Geauga	....	....	....	....	....	....	....	....	....	24
Greene	539,825	454,235	313.495	176.048	403,058	331,896	461,063	489,975	492,439	190.540
Guernsey	219,965	267,567	138.795	163,959	144.530	133,132	141,720	99,085	240,461	218.945
Hamilton	217,070	231,600	132,337	119,000	124,700	147.260	101,900	189,270	103,422	106,940
Hancock	....	....	....	....	....	7,300	....	....	....	25½
Hardin	....	....	....	....	....	....	....	....	....	....
Harrison	....	....	....	....	....	....	....	....	....	....
Henry	....	....	....	....	....	....	150	100	120	....
Highland	19,885	6,000	4,000	10,000	2,400	24,350	54,100	33,650	23,270	14,060
Hocking	....	....	....	....	....	....	....	....	400	120
Holmes	....	....	....	....	....	....	100	....	....	75
Huron	....	....	....	....	....	....	....	....	....	....
Jackson	....	....	....	....	....	....	....	....	....	....
Jefferson	....	....	....	....	....	....	....	7.800	....	....
Knox	....	....	....	....	....	....	....	....	10	....

Lake	2,500	2,000	4,000	3,000	25	1,900	....	....	....	650
Lawrence	65,140	89,942	48,368	63,700	54,550	65,946	98,975	70,848	40,297	17,800
Licking	....	....	....	....	....	500	1,000	2,000	....	....
Logan	3,600	....	....	50	....	....	1,200	16,700	66,000	15
Lorain	....	173	....	....	....	....	....	178	....	....
Lucas	....	25,912	32	....	200	1,800	....	25	300	....
Madison	....	....	....	....	....	....	....	....	20	....
Mahoning	....	....	....	97	....	....	....	75,210	....	....
Marion	....	....	2,500	....	....	....	....	....	....	100
Medina	259,320	168,487	145,620	165,500	241,660	206,821	276,608	223.966	238.440	134,500
Meigs	....	800	....	800	7,000	5,400	22,725	23,900	1,900	9,330
Mercer	36,400	15,900	6,164	6,200	24,420	19,270	45,350	30,600	18.200	1,025
Miami	7,344,086	5,347,080	3,894,770	3,211,654	3,816,515	2,725,052	3,322,427	3,640,545	3,056,706	1,964,420
Monroe	951,790	1,142,995	761,335	745,955	927,760	811,200	778,970	728.515	1,388,350	1,293,479
Montgomery	17,964,094	12,608,330	12,405,980	8,419,270	12,609,597	9,615,419	10,323,473	13,691,551	12,918,397	7,132,269
Morgan	600	1,000	....	....	8,500	1,700	39,450	23,852	101,850	60,270
Morrow	....	....	....	....	....	....	....	....	....	....
Muskingum	....	....	1,400	1,100	1,800	1,200	2,800	....	13,340	3,800
Noble	1,349,040	1,774,882	1,232,938	783,508	1,031,618	917,643	974,656	642,144	1,150,675	833,680
Ottawa	....	....	....	....	....	....	....	....	....	....
Paulding	900	....	3,000	....	7,000	13,700	14,800	6,950	4,000	800
Perry	160	550	....	1,000	2,000	1,800	3,225	2,000	7,400	1,500
Pickaway	....	....	....	....	....	....	....	....	....	....
Pike	20,255	34,268	7,800	19,100	22,600	47,130	50,275	26,070	17,443	22,910
Portage	....	....	....	....	1,960	....	800	....	3.100	1,000
Preble	8,310,407	5,740,552	5,095,539	3,203,455	5,032.959	3,517,182	4,724,452	5,724,404	4,905,350	3,128,000
Putnam	....	....	....	1,000	1,200	1,000	200	50	597	320
Richland	....	....	....	....	....	....	....	....	....	....
Ross	9,800	15,860	20,425	4,200	300	....	....	....	....	....
Sandusky	....	....	....	....	....	....	....	....	....	....
Scioto	313,410	271,619	257,400	213,075	250,500	375,407	406,809	348.315	283,390	182,275
Seneca	....	....	....	....	....	....	....	3,600	500	....
Shelby	108,100	76,770	32,990	43.355	158,344	78.367	388.130	173,230	165.021	37.968
Stark	....	....	500	5,150	2,852	2,200	5,116	1,000	570	4,100
Summit	....	....	....	....	700	100	....	....	....	....
Trumbull	....	....	....	....	....	....	....	....	75	....
Tuscarawas	....	....	....	....	....	....	....	....	....	....
Union	2,000	....	27	....	....	640	2,000	150	....	....
Van Wert	....	....	....	....	....	....	....	....	....	25
Vinton	....	....	30	....	....	....	....	2,200	1,850	190
Warren	4,129,975	2,967,346	4,100,536	2,014,207	2,859.282	2,724,593	3,069.224	3,446,973	3,217,078	1,796.522
Washington	9,086	150	4,800	6,070	4,750	2,700	2,200	4.630	54.190	78.934
Wayne	337,950	178,825	229,980	313,425	331,239	349,765	889,225	334,710	306,021	248,315
Williams	....	....	....	....	....	....	....	....	....	....
Wood	....	....	....	....	....	....	....	....	150	....
Wyandot	....	69	....	....	200	....	....	....	....	18
Total product	70,706,878	55,332,685	49,944,056	39,343,870	49,641,586	42,355,378	50,454,983	52,484,457	49,534,158	29,242,225
Total area	70,050	65,625	58,451	50,878	55,322	58,829	67,522	56,242	57,659	40,823

Average area for ten years, 58,139 acres.
Average product for ten years, 48,904,027 pounds.

COMPARATIVE TABLE SHOWING PRODUCTION OF BUCKWHEAT IN OHIO FOR TEN YEARS.

Counties.	Number of Bushels.									
	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.
Adams	....	....	60	10	25	47	72	40	99	158
Allen	32	90	....	2	13	....	186	115	221	188
Ashland	261	241	396	136	665	407	1,378	252	747	2,432
Ashtabula	93,080	86,578	92,476	52.841	37,866	84,077	44,697	33,974	65,137	55,960
Athens	484	1,080	777	255	....	28	90	65	....	346
Auglaize	180	121	201	245	396	420	2,624	230	319	1,022
Belmont	535	1,014	740	160	915	1,182	928	1,344	1,951	1,234
Brown	25	276	720	142	95	92	28	35	196	156
Butler	100	....	8	60	....	50	37	....	....	56
Carroll	405	333	489	65	312	703	1,064	440	1,872	821
Champaign	116	466	159	19	16	52	1,244	67	809	870
Clark	72	209	60	52	24	107	226	56	90	172
Clermont	35	....	....	69	91	71	261	153	462	200
Clinton	30	89	25	2	30	195	688	208	148	325
Columbiana	713	1,642	3,250	570	1,100	970	1,576	988	2,165	2.058
Coshocton	172	1,463	1,636	507	2,595	2,811	4,625	1.156	1.911	1,444
Crawford	116	61	110	230	120	161	562	163	701	1,090
Cuyahoga	43	97	143	158	248	404	123	221	84	279
Darke	49	74	167	46	202	217	829	534	847	1,354
Defiance	508	207	1,146	1,201	299	301	1,076	2.817	1.915	2,812
Delaware	154	176	180	340	1,050	612	1,207	383	921	975
Erie	3,107	3,642	4,926	3,008	1.933	3,632	14,085	2,428	3,482	4,582
Fairfield	....	....	200	....	71	164	682	147	676	182
Fayette	....	35	886	....	15	....	1,146	....	25	47
Franklin	72	233	80	20	217	93	210	159	801	1.946
Fulton	1,743	2,490	3,458	1,233	1,299	2,593	6,014	7,341	5,491	7,208
Gallia	50	32	45	16	192	66	50	68	119	200
Geauga	20,489	14,937	12,078	6,277	4,095	4,912	2,286	1,575	5,028	5.487
Greene	230	180	75	1.110	1,400	45	110	121	129	176
Guernsey	393	2,062	824	341	2,035	1,583	1,573	1,097	1.617	1,738
Hamilton	230	70	5,568	10	5	24	38	15	176	60
Hancock	370	35	66	27	80	90	570	168	413	1,049
Hardin	352	158	434	247	608	51	527	29,358	314	658
Harrison	35	415	405	18	205	502	901	84	570	241
Henry	226	253	623	600	292	548	1,317	2,862	3.567	3,627
Highland	....	12	10	10	212	276	341	189	197	141
Hocking	821	1,604	1,580	1,034	3,507	2,942	4,885	1,792	2,137	1,127
Holmes	184	245	434	284	508	257	740	200	762	1,032
Huron	667	849	603	295	196	50,615	2,483	719	1,956	3,182
Jackson	1,620	2,943	1,445	1.133	1,784	1,991	1,377	1,509	2,254	1,823
Jefferson	542	433	114	143	158	405	266	128	760	303
Knox	....	....	....	95	973	1,451	2,807	347	1,043	1,634

Lake	11,813	9,358	8,340	4,781	2,610	3,560	2,393	1,263	955	917
Lawrence	530	75	....	....	256	....	11	13	93	119
Licking	754	1,359	1,669	600	1,847	1,280	2,151	1,380	3,059	2,904
Logan	229	210	761	87	736	168	2,105	124	813	1,370
Lorain	10	172	255	311	265	741	499	190	333	561
Lucas	4,860	5,654	10,955	4,717	3,943	5,020	10,097	13,260	8,327	10,232
Madison	....	54	....	....	48	16	941	61	54	62
Mahoning	3,614	2,596	4,016	1,316	2,100	2,728	2,124	1,628	1,713	2,559
Marion	....	112	75	89	24	12	128	102	543	325
Medina	530	181	12	402	330	685	1,359	30,370	1,050	1,226
Meigs	241	305	151	261	579	453	249	107	321	233
Mercer	149	29	6	93	92	98	922	139	389	754
Miami	....	83	36	....	36	....	662	55	57	25
Monroe	2,408	5,487	2,800	1,652	9,251	4,925	3,375	4,392	4,675	1,918
Montgomery	20	....	198	....	....	5	20	36	146	20
Morgan	455	768	621	190	1,087	598	533	631	874	518
Morrow	30	....	15	....	433	429	721	118	1,100	1,049
Muskingum	175	63	195	31	174	364	783	372	597	360
Noble	156	166	189	20	431	1,225	895	715	501	365
Ottawa	....	84	190	55	22	650	59	186	257	355
Paulding	482	436	850	952	437	325	2,126	2,423	3,187	4,401
Perry	7,045	2,529	1,844	1,070	1,934	2,339	2,627	1,225	2,384	1,148
Pickaway	16	50	355	44	....	....	796	45	....	....
Pike	3,583	3,347	2,147	1,132	2,065	2,134	2.190	583	1,525	933
Portage	8,327	5,909	7,349	3,599	3,228	3,971	5,004	3,540	6,007	9,237
Preble	....	15	10	40	....	....	193	5	151	54
Putnam	235	214	82	247	60	52	568	323	602	1,681
Richland	88	42	318	226	727	1,628	980	510	1,414	1,773
Ross	1,363	2,353	1,310	783	499	1,723	1,105	223	605	272
Sandusky	1,723	455	480	80	496	118	881	347	903	453
Scioto	10,221	6,580	3,110	1.512	1,643	1,532	765	718	1,445	652
Seneca	100	205	264	136	15	82	437	224	279	479
Shelby	55	30	....	4	17	75	2,885	268	3,496	1,357
Stark	538	389	833	313	1,235	894	509	701	1,099	1,197
Summit	2,043	1,628	1,121	1,161	1,473	784	300	313	937	2.027
Trumbull	17,477	15,827	29,080	9,236	5,937	13,612	9,100	5,609	16,693	15.846
Tuscarawas	390	699	1,129	889	982	936	2,508	939	1,568	1,801
Union	15	164	125	391	964	495	1,307	205	1,197	935
Van Wert	90	152	196	46	101	46	705	498	1,357	2,259
Vinton	1,500	1,981	1,504	645	1,009	2,009	1,876	587	1,646	805
Warren	....	14	56	159	....	127	77	273	195	905
Washington	1,244	2,889	2,090	885	2,067	2,240	2,270	1,276	2,610	1,537
Wayne	720	336	722	257	136	834	543	259	835	1,116
Williams	249	237	1,085	379	424	334	766	2,016	1,779	2.013
Wood	473	408	1,265	760	40	423	2,726	555	1,381	2,823
Wyandot	96	39	66	89	127	251	442	251	420	329
Total product	212,288	198,529	224,475	109,651	115,727	225,068	179,642	173.206	191,684	192,300
Total area	12,002	11,908	13,338	7,835	8,617	11,920	14,278	10,408	11,974	14,811

Average area for ten years, 11,709 acres.
Average product for ten years, 182,257 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF FLAX SEED IN OHIO FOR TEN YEARS.

Counties.	Number of Bushels.									
	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.
Adams	32	....	....	....	....	....	....	....	....	....
Allen	....	....	....	....	....	....	145	....	....	17
Ashland	9,160	4.011	2,927	9,314	16,929	17.205	14.455	22,273	15,283	9,015
Ashtabula	....	7	....	....	....	....	....	....	1	....
Athens	....	....	....	....	....	....	....	....	....	....
Auglaize	3	....	....	....	....	2	7	....	10	126
Belmont	....	....	....	....	5	....	....	....	....	....
Brown	....	....	....	15	53	....	....	....	....	....
Butler	20	....	....	....	....	....	....	90	....	....
Carroll	....	....	50	6	....	....	....	27	....	....
Champaign	....	....	....	....	10	170	....	....	....	30
Clark	....	....	....	....	28	45	645	....	....	....
Clermont	....	....	....	....	....	....	....	....	....	....
Clinton	....	....	....	....	....	100	108	25	....	....
Columbiana	....	....	....	12	....	....	....	....	....	....
Coshocton	....	....	....	5	....	....	....	....	....	....
Crawford	....	....	12	100	75	267	327	250	862	1,022
Cuyahoga	....	....	....	....	....	....	....	....	....	60
Darke	....	....	78	....	....	262	482	100	85	....
Defiance	25	....	....	....	65	....	....	138	56	....
Delaware	....	....	....	....	50	....	....	....	....	....
Erie	....	....	....	8	....	....	....	....	....	....
Fairfield	....	....	....	....	36	....	....	....	....	....
Fayette	....	....	....	12	....	....	....	....	....	62
Franklin	....	45	38	15	....	....	....	....	....	....
Fulton	....	....	....	....	209	501	9	343	....	10
Gallia	....	....	....	....	....	....	....	....	....	10
Geauga	30	....	....	....	10	....	....	....	90	60
Greene	....	....	....	....	....	50	10	....	....	70
Guernsey	....	....	....	....	....	4	21	5	4	12
Hamilton	....	....	....	....	....	....	....	....	....	....
Hancock	12	100	24	....	....	18	50	....	....	92
Hardin	....	....	432	....	....	85	733	....	5	....
Harrison	....	....	....	....	....	....	....	....	....	....
Henry	6	44	....	10	12	....	12	283	10	54
Highland	20	....	....	96	147	61	31	....	....	....
Hocking	....	....	....	....	....	....	....	....	....	....
Holmes	....	....	....	35	....	....	....	....	....	....
Huron	3,105	3,156	6,723	3,486	6,143	6,026	3.833	1,718	2,952	1,965
Jackson	....	....	....	....	....	....	....	....	....	....
Jefferson	....	....	....	....	....	....	....	....	....	....
Knox	....	....	....	....	....	....	....	....	....	....

Lake	....	....	....	....	....	....	10	....	2,800	....
Lawrence	....	....	....	....	....	....	....	....	....	....
Licking	12	7	....	....	....	....	....	....	....	....
Logan	....	....	....	....	....	20	8	10	....	....
Lorain	445	485	300	1,195	2,778	2,216	1,882	774	913	1,320
Lucas	....	....	500	375	450	494	....	500	235	245
Madison	....	....	....	....	....	....	....	....	....	....
Mahoning	....	....	....	....	....	....	....	....	....	45
Marion	....	30	....	....	....	....	....	....	....	779
Medina	16	261	131	345	2,645	6,399	4,072	2,719	5,922	4,370
Meigs	....	....	....	....	14	....	....	....	....	....
Mercer	....	28	....	16	8	6	....	10	....	13
Miami	....	7	....	20	....	100	360	204	80	880
Monroe	....	....	25	4	....	....	....	7	6	1
Montgomery	6	....	200	....	....	....	28	....	125	7
Morgan	....	....	....	....	....	....	....	19	....	....
Morrow	....	....	....	....	....	....	97	....	....	....
Muskingum	....	....	....	....	13	....	....	....	....	....
Noble	15	....	....	15	....	5	....	....	....	....
Ottawa	....	....	....	....	....	....	....	....	....	....
Paulding	17	....	....	....	....	....	20	7	100	40
Perry	....	....	....	....	....	....	....	....	....	....
Pickaway	....	....	....	....	....	60	....	....	....	....
Pike	....	10	....	....	....	5	....	....	....	....
Portage	....	....	....	5	18	97	134	90	327	404
Preble	....	....	....	....	66	191	1,085	....	225	344
Putnam	30	25	25	....	25	....	9	....	11	2
Richland	180	140	285	530	1,629	1,434	1,573	1,086	3,012	1,415
Ross	....	19	....	....	....	....	....	....	....	....
Sandusky	....	....	....	....	....	....	....	....	....	....
Scioto	....	....	....	....	....	....	....	....	....	....
Seneca	....	3	11	....	32	120	4	....	220	80
Shelby	....	....	....	....	....	....	448	84	120	277
Stark	....	....	11	22	....	....	....	5	2	7½
Summit	....	....	....	....	....	....	....	....	....	....
Trumbull	....	....	....	....	....	....	....	....	319	518
Tuscarawas	....	....	12	....	....	....	....	....	....	....
Union	6	....	....	....	....	....	....	....	....	6
Van Wert	....	....	....	....	150	90	100	20	60	15
Vinton	....	....	....	....	....	....	....	....	....	2
Warren	15	....	....	....	....	....	90	....	....	....
Washington	....	....	10	2	....	....	....	....	....	4
Wayne	312	706	147	480	1,580	1,916	2,237	1,117	2,412	2,261
Williams	....	....	....	....	....	....	....	....	....	....
Wood	....	....	....	....	....	....	85	75	60	....
Wyandot	3	95	....	15	....	36	....	....	....	....
Total product	13,470	9,179	11,941	16,138	33,270	37,988	33,110	31,979	36,307	25,640

Average product for ten years, 24,902 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF FLAX IN OHIO FOR TEN YEARS.

Counties.	Pounds of Fiber.									
	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.
Ashland	346,600	382,120	142,700	851,457	1,187,045	1,155,800	800,203	1,365,500	766,360	552,500
Ashtabula										
Auglaize							7			
Brown			6		73					
Champaign					30					
Crawford							4,005	400	18	5
Darke										
Fayette									14	
Fulton			751							
Geauga										
Hamilton		7	2,000							
Hardin					20					
Henry						1,500				
Highland			161,800	238,500	484,200	401,300	241,500	287,300	121,400	90,115
Huron	147,200	361,900							30	
Knox									320	
Lake			12,000	92,500	347,900	182,800	108,500	31,875	16,500	59,010
Licking	8									
Lorain	16,000	31,000	3	60					10	
Lucas										
Mahoning				2,003	48,094	83,700	121,700	55,400	63,019	37,514
Medina		6,000	12,000		2,000			1,006	6	84,800
Miami				15						
Monroe										
Montgomery						2,000	6,000	4,000	11,087	29,500
Pike		40			20					
Portage								400	50	
Preble			10,000	36,000	107,800	58,800	260.000	56,800	43,000	42,650
Putnam	80									
Richland	16,000	15,000					10,000		6,000	1,603
Seneca										4
Shelby										19,000
Stark						20				
Trumbull			13,000	24,470	85,903	67,300	240,100	36,100	135,370	126,600
Warren										

Wayne	20,500	64,029	....	....	....	....	....	....	....	....
Totals	546,388	860,096	343,460	1,245,005	2,263,085	1,953,220	1,792,015	1,838,781	1,163,184	1,013,301

Average product for ten years, 1,301,853 pounds.

COMPARATIVE TABLE SHOWING PRODUCTION OF BROOM CORN IN OHIO FOR TEN YEARS.

Counties.	Pounds of Broom Brush.									
	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.
Adams	1,635	....	....	600	600	350	15,305	1,800	....	2,387
Allen	....	....	....	....	2,000	2,000	1,100	....	30	....
Ashland	400	....	....	....	....	350	2,540	800	800	400
Ashtabula	....	....	12	....	....	....	....	....	....	....
Athens	....	....	....	....	400	....	....	....	....	....
Auglaize	500	300	1,080	3,000	3,500	3,090	150,375	86,110	100,700	162,000
Belmont	....	....	1,000	....	1,388	1,125	4,121	2,000	2,000	2,320
Brown	2,300	....	....	1,008	10,600	4,503	6,595	300	2,714	2,693
Butler	4,000	9,500	6,302	6,000	3,400	6,550	61,050	6,000	7,500	13,800
Carroll	....	....	....	....	84	560	350	....	....	....
Champaign	4,000	....	....	6,000	30,200	16,100	56,800	345,305	47,500	21,650
Clark	....	....	....	....	....	1,000	15,640	900	....	....
Clermont	....	....	....	....	2,200	2,300	6,325	....	....	....
Clinton	20	....	....	....	....	....	175	150	....	1,610
Columbiana	....	....	....	....	....	....	....	100	....	800
Coshocton	....	....	....	....	2,000	25	....	....	50	....
Crawford	....	....	....	....	....	625	315	....	....	1,000
Cuyahoga	....	....	....	....	100	40	....	....	....	....
Darke	3,700	7,500	10,450	6,000	14,100	28,700	71,070	39,150	41,360	3,650
Defiance	2,100	1,500	750	....	5,000	....	6,000	....	....	3,200
Delaware	....	....	....	....	....	500	600	....	3,000	....
Erie	....	2,500	....	....	600	2,500	3,000	....	....	4,000
Fairfield	....	....	....	....	262	400	6,780	700	....	350
Fayette	....	....	10	....	....	....	....	3	8,000	6,000
Franklin	....	2,000	12	1,600	13,100	6,540	19,050	6,950	39,820	4,550
Fulton	1,560	....	4,000	....	....	7,011	9,042	11,400	500	1,700
Gallia	....	....	100	3,200	700	4,000	2,025	5,495	4,600	....
Geauga	....	....	....	50	....	....	....	....	....	....
Greene	800	....	....	....	4,650	5,650	29,195	700	....	500
Guernsey	....	....	400	400	400	900	1,400	630	175	800
Hamilton	....	....	....	3,500	3,500	2,364	8,117	18,000	82	....
Hancock	....	....	....	....	....	6,000	16,020	88	....	520
Hardin	....	....	....	....	60,000	800	5,720	....	....	1,000
Harrison	....	....	....	....	....	732	238	....	....	....
Henry	....	....	....	....	....	....	435	1,200	1,000	4,000
Highland	....	700	10,500	....	6,200	8,430	9,500	3,110	200	8,000
Hocking	....	....	....	75	1,470	1,640	4,335	2,400	1,000	2,090
Holmes	....	....	....	....	1	1,725	3,301	10	600	2,000
Huron	500	1,000	3,050	3,250	6,000	5,400	5,675	....	....	....
Jackson	....	....	....	....	....	....	....	....	....	....
Jefferson	....	600	....	....	150	....	....	....	....	....

Knox	......	......	......	......	......	......	80	......	......	......
Lake	......	......	......	......	......	......	......	......	......	......
Lawrence	......	......	......	200	......	......	475	......	......	3,700
Licking	1,000	2,000	2,000	5,600	8,100	3,000	12,387	12,800	2,500	3,150
Logan	......	......	5	......	......	......	8,500	......	......	......
Lorain	......	......	......	......	......	......	......	......	......	3,809
Lucas	......	......	......	......	......	25	800	......	......	......
Madison	......	......	10,000	1,600	22,000	......	......	......	......	......
Mahoning	......	......	......	......	......	......	100	15	60	......
Marion	5,000	7,000	......	60,000	10,100	5,700	25,340	14,550	......	......
Medina	......	......	......	11,000	600	1,950	1,800	......	......	......
Meigs	4,500	7,375	850	6,000	3,980	4,000	16,756	276	......	1,400
Mercer	150	1,150	700	......	3.075	1,500	11,074	1,080	80	2,100
Miami	800	10,100	6,800	1,750	4,150	22,450	42,890	10,630	6,000	4,000
Monroe	......	700	......	......	56	......	2,312	472	345	25
Montgomery	10,000	12,195	11,500	800	28,090	23,600	19,300	44,900	21,500	1,400
Morgan	......	......	......	......	190	1,450	7,500	260	1,450	310
Morrow	......	......	......	......	......	1,800	100	......	......	......
Muskingum	......	......	......	......	400	85	140	60	......	300
Noble	......	......	......	......	......	2,000	2,000	......	900	2,000
Ottawa	......	......	......	......	114	......	......	......	......	......
Paulding	......	......	......	3,050	......	......	3,300	400	400	......
Perry	408	635	937	......	......	1,700	1,423	......	......	900
Pickaway	......	31	200	200	4,300	52,000	185,300	......	......	......
Pike	......	2,100	1,150	800	400	3,750	4,925	......	1,000	2,000
Portage	......	......	......	......	......	......	......	......	......	700
Preble	......	......	1,700	4,600	10,600	16,000	27,530	3,180	2,000	4,820
Putnam	12,000	......	......	......	......	96	2,800	20	36,000	15,000
Richland	......	......	......	......	......	2,100	390	......	100	700
Ross	......	1,000	......	......	8,000	8,700	52,700	8,400	500	3,000
Sandusky	......	......	......	800	1,000	1,600	1.200	......	......	......
Scioto	3,000	2,900	600	1,200	250	4,800	15,200	280	200	2,070
Seneca	1,000	......	......	......	......	......	600	......	......	......
Shelby	8,200	5,100	3,500	6,200	6,400	4,354	37,278	11,000	4,000	4,400
Stark	......	4	......	......	......	6,180	......	3,832	50	......
Summit	50	......	......	......	500	53	......	250	......	......
Trumbull	......	......	6,000	......	100	100	......	1,000	......	......
Tuscarawas	......	......	......	......	500	2,005	2,590	664	2,000	8,000
Union	......	3,000	......	......	150	3,000	8,287	5,055	2,000	2,500
Van Wert	......	......	......	......	90	160	17,300	8,000	......	......
Vinton	......	......	......	......	......	......	800	......	......	100
Warren	......	20	18	......	100	......	11,075	3,600	......	......
Washington	......	......	......	......	......	170	2,062	1.000	600	......
Wayne	......	......	20	......	530	......	5,285	400	......	......
Williams	......	......	2,000	......	......	2,125	......	2,000	......	......
Wood	......	......	......	......	......	3,200	1,900	......	......	......
Wyandot	......	......	3	......	1,100	......	2,000	2,000	900	......
Total product	67,623	80,910	85,649	138,483	288,080	301,563	1,057,693	669,475	344,166	317,404
Total area	157	220	278	227	6,886	726	2,228	907	748	781

Average area for ten years, 696 acres.
Average product for ten years, 335,104 pounds.

COMPARATIVE TABLE SHOWING USE OF COMMERCIAL FERTILIZERS FOR TEN YEARS.

Counties.	Pounds used.									
	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.
Adams	4,037,723	3,972,450	3,508,900	3,311,023	3,211,435	2,919,220	2,931,140	3,574,714	3,026,600	2,268,462
Allen	582,600	450,500	289,100	415,800	398,000	328,400	340,500	443,040	150,190	104,924
Ashland	3,879,550	3,389,710	2,977,070	2,842,200	2,397,610	2,191,350	2,419,320	2,697,880	2,657,880	2,095,100
Ashtabula	5,889,479	5,818,727	5,580,978	6,877,055	5,478,807	4,419,249	3,827,922	4,290,050	4,290,760	3,999,040
Athens	1,149,415	1,453,600	1,684,378	835,500	1,371,910	1,103,541	1,626,770	1,790,700	1,844,100	1,709,405
Auglaize	1,008,850	799,160	714,300	1,128,900	833,550	344,210	183,990	394,450	83,100	58,600
Belmont	1,810,741	1,954,380	1,499,120	1,817,200	2,054,865	1,794,244	2,221,540	1,913,426	1,726,742	2,140,275
Brown	2,664,350	2,833,070	2,707,050	1,965,797	1,938,785	1,627,582	1,717,572	4,079,375	3,640,480	1,218,577
Butler	1,795,550	1,303,035	935,300	750,050	995,900	317,940	185,405	1,061,300	493,840	214,100
Carroll	1,932,819	2,008,600	1,762,700	1,666,360	1,671,900	1,556,340	1,177,753	1,678,730	1,899,281	1,703,125
Champaign	3,079,912	2,037,400	1,655,960	2,723,700	2,526,150	1,844,200	1,586,350	2,691,482	1,410,980	841,820
Clark	3,694,675	2,147,450	1,766,500	1,693,050	1,591,200	908,360	883,970	1,341,070	1,034,668	646,809
Clermont	2,054,068	1,582,811	2,082,488	1,220,237	1,328,050	1,160,755	1,040,330	1,205,660	1,032,190	753,600
Clinton	5,016,290	3,913,630	3,005,685	2,665,690	2,623,164	1,280,500	764,300	1,514,200	810,263	665,048
Columbiana	3,978,372	3,886,685	4,131,796	3,543,110	3,171,208	3,182,900	3,721,414	3,982,220	3,399,088	3,255,009
Coshocton	2,656,550	2,098,700	1,811,775	2,176,716	2,171,770	1,457,665	1,239,765	1,891,700	1,461,990	1,163,050
Crawford	3,184,580	2,865,235	2,404,250	1,915,280	1,703,200	1,218,523	1,357,220	1,511,020	1,327,400	1,067,488
Cuyahoga	4,552,980	5,680,400	4,874,950	3,995,200	3,287,206	3,838,160	11,955,470	4,470,300	3,610,000	2,981,390
Darke	3,322,065	2,219,365	1,404,464	1,591,600	1,369,520	716,975	783,340	1,997,157	914,138	694,410
Defiance	316,380	325,100	213,360	98,700	65,060	90,500	76,500	67,200	75,300	57,150
Delaware	1,933,250	1,760,942	1,343,130	1,160,280	1,007,520	1,043,086	978,863	1,189,350	788,100	237,456
Erie	2,277,503	2,300,900	1,870,990	2,104,000	1,277,350	1,231,900	812,730	1,460,350	903,870	674,760
Fairfield	5,348,200	5,488,710	4,837,850	4,101,710	4,847,820	2,876,070	2,579,480	4,186,150	2,755,650	1,885,490
Fayette	3,174,261	3,571,150	2,647,750	2,558,300	2,948,200	2,525,115	1,450,100	1,829,450	1,573,471	782,171
Franklin	1,859,775	2,000,558	2,113,340	2,479,900	1,471,528	922,620	655,400	723,500	296,350	200,701
Fulton	538,200	266,250	142,600	109,559	76,900	93,600	147,125	125,380	151,250	104,900
Gallia	1,707,500	1,674,120	1,342,106	1,122,850	1,119,100	1,825,230	2,051,730	2,318,660	2,341,521	2,479,963
Geauga	3,460,965	3,403,985	3,658,900	2,769,850	2,989,500	2,526,400	2,852,840	2,626,425	2,391,347	2,313,150
Greene	3,448,750	2,897,594	2,613,250	1,953,950	1,662,900	738,900	622,100	859,250	529,400	261,940
Guernsey	1,688,530	1,883,599	1,391,710	1,555,350	1,907,895	1,601,358	1,503,190	2,039,340	2,136,725	1,789,000
Hamilton	403,800	370,146	206,375	40,200	....	....	143,231	....	....	....
Hancock	1,000,500	839,640	648,675	666,000	805,600	615,350	456,250	738,800	494,000	231,350
Hardin	624,900	1,901,450	648,800	316,481	575,700	352,850	415,700	279,300	146,900	34,850
Harrison	768,600	706,750	701,440	832,385	898,700	659,001	674,300	897,780	810,421	1,316,690
Henry	212,600	158,050	154,810	74,900	59,369	93,052	82,150	72,240	70,100	40,300
Highland	6,039,940	5,953,550	5,537,290	6,835,623	4,596,340	3,679,770	2,868,200	3,300,780	3,848,215	3,251,640
Hocking	1,746,705	2,222,700	2,013,610	1,751,007	1,719,876	1,618,250	1,578,385	2,357,840	2,356,851	2,027,768
Holmes	2,872,000	2,708,125	2,106,470	1,894,100	1,849,383	1,746,250	1,263,950	1,702,830	2,120,800	1,388,720
Huron	6,848,330	5,494,000	4,531,440	3,899,270	4,200,410	3,373,021	2,590,950	4,068,079	2,868,650	2,794,010
Jackson	2,434,500	1,651,150	1,356,200	1,394,600	2,187,610	1,582,400	2,004,319	2,380,320	1,857,810	1,934,568
Jefferson	1,408,310	1,349,025	1,339,650	1,410,190	1,317,040	1,067,340	994,450	1,151,650	1,422,910	1,447,120

Knox	3,105,940	3,105,560	3,105,420	3,080,100	2,402,070	2,390,350	2,699,220	3,224,630	2,402,450	1,867,825
Lake	2,283,450	1,784,000	2,073,858	1,547,755	1,435,200	1,730,900	1,129,500	1,743,790	1,117,600	550,429
Lawrence	547,800	207,377	175,020	359,800	315,006	454,960	520,627	554,190	415,800	205,350
Licking	3,744,580	3,992,244	3,605,280	3,262,650	3,081,550	2,333,950	2,330,497	3,853,490	2,297,390	1,346,860
Logan	1.229,450	933,300	1,141,470	1,368,960	1,276,300	661.550	582,500	1,215,956	382,200	193,890
Lorain	5,002,200	4,690,085	3,869,375	5,895,890	3,557,700	3,646,110	2,672,400	2,192,506	3,074,430	2,517,699
Lucas	471,963	441,140	354,060	138,500	106,280	72,400	72,900	250,510	147,500	81,400
Madison	510,800	589,320	290,600	370,800	599,064	217,000	117,100	173,945	60,600	8,000
Mahoning	4,410.034	4,318,440	4,140,875	3,545,154	4,011.274	3,926,690	3,286,717	2,574,465	3,673,980	3,992.194
Marion	878,135	764,500	610,900	462,100	99,530	320,215	255,900	331,100	257,900	81,700
Medina	7,533,000	7,090,500	7,252,300	6,035,900	5,532,950	5,065,486	5,248.250	669,380	5,267,500	4,399,290
Meigs	1,785,250	1,949,140	1,717,550	1,698,610	1,686,792	2,395,118	2,616,850	2,762,590	2,931,254	2,378,017
Mercer	1,477,500	861,470	576,550	349,000	320,300	251,200	134,500	178,150	102,100	68,100
Miami	3,215,175	2,553,720	1,953,129	1,577,300	2,007,400	1,453,830	1,373,080	2,298,280	1,310,426	696,650
Monroe	2,475,300	2.199,710	2,156,660	2,053,550	2,277,100	1,735,100	1,627,468	4,850,551	2,321,430	1,890,260
Montgomery	4,494.260	4,084,028	3,400,750	3,512.400	3,584,425	2,666,660	1,915,300	3.326,597	2,391.778	2,175,490
Morgan	2,393,212	2,473.405	2,220,622	1,923,300	2,195,700	1,935,000	1,816,257	2,368,800	2,304,923	2,370,650
Morrow	3,232,802	3,384,584	3,969,866	2,796,490	2,310,680	1,696,020	2,255,210	2,745,410	2,323,896	1,811,375
Muskingum	3,685,120	3.458,661	3,830,040	2,908,100	2,874,550	2,632,780	2,629,010	3,513,910	2,832,165	3,258,748
Noble	1,385,165	1,278,370	1,144,560	1,104,354	1,426,800	1,142,926	964.400	1,259,315	1,067,016	1,000,100
Ottawa	5.000	8,500	8,200	2,000	8,000	2,200	3,800	5,700	1.400	7,400
Paulding	15,020	....	....	5,000	....	....	2,190	1,700	14,243	1.700
Perry	4,221,395	3,930,477	3,740,720	3,543,217	3,523,820	2,988,770	2,654,900	3,835,460	3,650,810	3,437,350
Pickaway	4,744,300	4,764,570	3,380,040	3,326,967	3,746,290	1,962,860	1,934,100	2,244,200	587,913	452,700
Pike	2,911,670	2,478,405	2,497,459	1,633,920	2,434,970	1,715.964	1,919,798	2,773,350	2,680,680	1,917,743
Portage	4,939,950	5,522.950	5,589,405	5,043,600	4,779,116	5,128,260	4,257,770	3,636,760	3,451,854	3,698,352
Preble	7,196,930	6,623,200	5,480,775	6,003,590	6,472,252	5,240,950	4,093,285	5,992,850	4,131,015	3,406,290
Putnam	23,600	34,400	25,400	5,500	21,750	....	9,500	2,800	6,000	2,600
Richland	4,163,560	3,784,360	3,562,310	2,979,240	2,849,100	2,817,150	2,645,961	3,540,495	8,341,551	2,745,460
Ross	5,339,010	3,833,250	2,733,550	3,136,759	3,565,257	2,127,550	1,751,290	3,608,580	2,156,360	1,335,642
Sandusky	1,572,901	1,387,650	1,081,300	506,750	760,860	300,762	180,900	658,700	434,100	284,400
Scioto	2,716,485	2.943,401	2,951,490	2,520,090	2,570,700	3,092,974	2,836,000	3,033,800	1,984,505	1,526,890
Seneca	6,711,278	7,782,279	4,912,000	4,194,650	4,013,286	3,265.950	2,196,480	3,606,934	2,390.500	1,900,840
Shelby	1,927,070	1,392,200	1,407,913	1,164,850	1,417,250	690,029	662,200	1,476,300	582,510	361,570
Stark	5,893,830	5,906,001	5,775,427	4,560,690	4,224,185	3,899,847	3,301,750	3,253,025	3,535,770	2,268,469
Summit	4,192,760	4,067,641	3,769,560	3,497,400	3,020,780	3,578,950	3,207,000	3,445,990	2,781,627	2,337.740
Trumbull	4,056,280	3,785,737	3,953,256	5,072,139	3,218,700	3,532,714	3,322,727	3,251.152	3,320,628	2,915,942
Tuscarawas	1,931,076	1,975,810	1,675,091	1,554.318	1,564,780	1,380,500	1,095,122	1,706,576	1,573.450	1,209.200
Union	1,116,400	820,850	740,500	777,300	511,196	234,100	455,405	579,575	168,350	62,900
Van Wert	52,400	....	1,400	....	....	....	2,000	....	1,000	1.600
Vinton	919,590	1,036,900	1,020,000	1.115,500	1,288,875	1,108,500	1,121,410	1,997,590	1,964,350	1.407.600
Warren	2,541,450	2,565,770	2,026,460	1,398,140	1,399,350	825,548	65,300	953,600	870,900	562,750
Washington	4,126,767	4,223,613	3,653,652	3,456.730	3,400,987	3,495,070	3,997,240	5,170,510	4,617,730	3.375.175
Wayne	8,105,288	9,711,358	8,154,470	6,537,870	6,900,825	6,036,462	5,895,201	5,516,148	4,503,060	3,560.698
Williams	967,525	331,470	197,000	164,200	93,300	128,200	79,825	235,900	175.550	63,300
Wood	693,420	483,200	228.200	387,100	232,800	366,120	403.500	725,940	518.300	453.400
Wyandot	2,011,950	1,728,450	1,207,725	1,045.310	1,027,450	696.400	643,900	710,500	574,750	217.516
Totals	242,707,109	230,615,398	202,709,698	189,857,217	182,894,581	153,816,702	149,752,554	178,926,948	152,190,375	123,146,474
Total cost	$2,426,752	$2,228,190	$1,932,792	$1,784,788	$1,764,445	$1,665,610	$1,483,390	$2,299.136	$1,543,915	$1,481,583

Average number of pounds for ten years, 180,661,705.
Average cost for ten years, $1,791,799.

COMPARATIVE TABLE SHOWING PRODUCTION OF WOOL IN OHIO FOR TEN YEARS.

Counties.	Pounds Shorn.									
	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.
Adams	26,581	29,572	25,560	28,105	34,170	38,247	44,800	43,672	49,291	39,021
Allen	81,817	71,427	64,999	62,852	58,951	85,797	122,746	104,950	101,433	77,012
Ashland	214,109	187,791	145,780	206,233	199,220	212 363	209,384	245,615	312,500	169,597
Ashtabula	39,415	32,952	39,366	42,671	53,096	60,939	84,189	86,941	95,031	90,381
Athens	233,169	227,555	240,263	194,092	223,510	266,529	241,937	271,610	214,080	196,726
Auglaize	25,210	23,150	28,713	39,604	41,392	51,515	52,137	54,598	58,756	49,405
Belmont	402,589	415,601	340,074	407,696	310,595	380,797	407,023	426,580	387,709	348,934
Brown	28,357	31,758	32,945	33,552	35,737	52,579	56,980	60,240	53,060	49,705
Butler	41,903	37,798	30,436	35,948	38,295	37,169	46,408	36,797	37,791	25,832
Carroll	288,975	305,014	214,190	293,894	285,676	336,840	329,045	313,829	324,576	326,937
Champaign	121,905	136,434	84,601	93,830	89,522	119,319	128,017	126,343	126,897	128,211
Clark	115,793	116,091	107,295	355,472	99,579	114,949	112,222	99,718	153,424	120,487
Clermont	17,113	11,035	13,976	12,079	19,053	28,776	34,340	26,691	33,582	25,554
Clinton	78,560	92,153	99,304	98,868	104,528	112,815	138,618	122,750	132,597	97,317
Columbiana	141,325	130,614	125,685	112,175	122,708	167,791	169,436	181,462	176,251	155,007
Coshocton	578,128	505,458	523,301	505,728	456,812	473,131	445,601	428,255	352,528	404,367
Crawford	294,336	240,193	227,544	214,644	208,226	220,206	228,378	177,393	220,367	199,646
Cuyahoga	23,985	20,983	21,391	22,705	29,596	28,457	26,949	30,982	31,282	29,773
Darke	23,228	28,834	30,473	22,953	29,285	31,171	39,620	39,960	38,301	28,031
Defiance	78,089	73,409	78,404	66,422	70,421	78,156	80,503	76,257	74,626	62,783
Delaware	235,436	219,036	214,661	181,386	234,583	243,245	230,806	252,780	221,301	186,144
Erie	58,234	48,681	49,261	42,225	59,474	67,367	64,621	69,572	63,289	59,675
Fairfield	72,465	54,418	59,366	59,561	66,819	71,324	77,127	87,511	91,616	56,350
Fayette	40,238	33,346	30,328	36,189	35,958	49,850	51,171	32,199	37,537	49 655
Franklin	38,644	37,305	32,632	42,351	50,781	49,988	43,255	52,330	57,571	46,748
Fulton	78,629	74,111	79,895	70 011	82,581	105,710	119,624	102,542	127,934	110,902
Gallia	61,313	54,367	34,083	36,688	43,173	53,238	57,537	61,700	72,843	76,464
Geauga	23,755	19,068	19,823	27,535	39,415	49,863	53,826	63,852	82,311	71,056
Greene	106,095	92,827	100,203	82,988	98,246	123,398	104,916	107,164	94,138	99,616
Guernsey	412,323	417,606	385,649	358 805	377,626	443,275	446,661	432,097	398,901	355,240
Hamilton	5,204	5,450	5,343	6,210	3,039	6,605	5,380	3,379	6,024	6,272
Hancock	198,140	201,051	198,069	167,824	170,155	216,779	197,056	192,938	194,200	171,988
Hardin	133,128	133,325	130,451	153,483	137,012	141,815	158,254	140,341	155,790	45,158
Harrison	634,147	624,636	625,140	676 202	574,998	595,545	570,575	540,864	580,209	562,095
Henry	36,814	32,847	30,745	33,062	36,548	40,734	47,672	44,841	49,356	41,028
Highland	58,300	56,405	59,008	54,992	75,950	115,618	105,851	110,726	109,426	84,205
Hocking	89,543	75,603	75,656	77,642	69,505	88,924	76,176	87,109	86,158	83,317
Holmes	146,892	81,647	80,997	82 173	88,410	107,969	118,367	123,153	142,832	118,686
Huron	358,768	345,730	321,771	317,839	310,231	351,575	313,015	354,720	283,336	284,424

Jackson	14,145	13,404	18,617	24,159	25,619	35,414	32,678	41,820	41,888	44,014
Jefferson	274,029	203,201	264,193	227,873	279,106	324,503	313,546	335,548	314,497	310,654
Knox	675,275	675,251	674.802	670,670	531,337	636,745	487,947	503,681	498,445	457,119
Lake	15,892	14,344	14,873	18,053	14,809	29,504	30,708	25,981	24,688	32,918
Lawrence	2,876	3,082	3.163	3,323	5,681	6,772	9,440	5,681	11,348	10,165
Licking	603,352	562.815	525,813	566,531	594,251	519,917	445,798	534,616	543,343	470.768
Logan	170,319	153,250	148,083	161,867	159,094	175,368	148,441	206,580	176,567	237,135
Lorain	99.020	95,899	78,496	94,754	106,101	130,316	128,508	118,142	118,695	115,431
Lucas	8,978	8,318	10,228	8,314	9,639	10.971	14,342	15,618	13,416	14,290
Madison	64.503	74,244	70,527	49,084	55,779	81,536	101,683	100,981	150,909	164,085
Mahoning	99,967	85,491	86,957	98,461	83,723	111,351	122,254	115,545	132,501	133,325
Marion	283.012	239,992	237,484	260,585	272,410	372,143	360,073	300,818	360,904	317,326
Medina	126,307	110,496	111,689	122,864	121,472	167,779	180.371	181.775	180,121	170.083
Meigs	135,071	105,730	141,077	125,147	118,421	155,792	138,332	143,300	143,743	132,118
Mercer	40,418	39,942	40.513	45,935	47,953	63,264	61,771	58,840	62.504	48.882
Miami	9,674	5,340	5,470	7,357	10,339	17,095	19,239	18,179	20,255	19,570
Monroe	50,508	51,292	54.792	56,006	60,734	77,222	87.280	94,018	92,446	70.686
Montgomery	8,463	9,093	6,936	9,360	9,999	8,249	8,932	11,711	15,400	11,713
Morgan	411,225	382,655	375.818	330,456	357,027	404.740	409,002	380,376	339,835	312.424
Morrow	472,424	428,241	390,846	423,541	389,462	367,592	348,507	370,108	348,115	341,632
Muskingum	581.551	494,537	487,430	461,199	459,276	541,340	500.502	458.708	450,004	441.585
Noble	330,549	313,637	293,441	280,199	298,045	343,522	292,775	302,211	258,796	232.378
Ottawa	35,063	25,628	24,287	23,954	28,681	27,304	24,397	23,935	28,259	27,160
Paulding	37,026	33,261	32,860	32,370	38,192	47,429	40,518	35,963	35,192	24,015
Perry	155,496	131,780	142.103	133,946	128,001	151,056	153.238	144,170	143,651	131.731
Pickaway	33,024	33,700	27,346	30,548	51,701	40,489	50,416	59,604	35,951	38,315
Pike	13,735	18,865	17,294	10,007	13,667	16,693	20,212	16,311	20,547	21.761
Portage	90,938	76,791	81,813	89,983	99,099	120,195	141,814	126,665	122,835	118,615
Preble	19,906	20,784	23.581	19,050	20,595	26,399	32,247	34,575	39,887	31,584
Putnam	49,026	55,104	42,325	45,510	50,618	57,420	64,454	43,257	53,571	49,363
Richland	225,625	202,193	216,985	182,576	180,113	205,737	192,620	192,336	218,367	164.947
Ross	46,833	27,277	13,874	26,820	30,261	32,291	46,451	67,999	55,115	53,111
Sandusky	57,758	59,511	63.532	73,734	74,499	75,898	81,806	82,044	83,572	85.016
Scioto	2,453	3,912	4,725	5,018	5,025	7,225	5,511	5,554	5,768	5,508
Seneca	255,550	226,792	158,573	179,776	192,198	522.593	182,681	177,127	174,341	145.419
Shelby	23,334	16,759	22,383	20,899	26,383	39,876	39,859	40,480	36,368	29,130
Stark	79,095	72,850	76.755	80,752	85,235	102,874	117,935	124,765	136,455	112.335
Summit	24,502	22,935	28.682	29,015	34,360	49,286	51,532	40,961	48,618	44,759
Trumbull	66,845	66,091	67,197	71,316	80,880	109.574	137,088	134,121	143,291	135.160
Tuscarawas	156,970	145,132	142,171	144,615	143,737	155,922	158,758	155.420	151,658	142,789
Union	231,553	239,405	150,453	182,522	178,228	216,262	252,422	252,370	203,216	194,238
Van Wert	61,738	61,107	59,034	41,512	63,594	72,707	83,240	61,674	74,896	50.665
Vinton	77,946	78.648	79,719	92,981	96,741	105.460	90,083	80,062	104,481	98.716
Warren	20,506	25,682	20,622	27,879	34,333	46,366	50,763	64.112	70.676	59,385
Washington	180,076	157,147	141,076	144,973	162.764	191,940	101,682	198,705	199.010	183,583
Wayne	103,944	95,464	99,838	90,103	107,773	127,400	131,031	125.543	133,238	116,101
Williams	184,642	164,597	161,361	164,225	174,932	163,905	157,452	153,175	166,295	136,522
Wood	46.845	43,481	45,447	52.661	61,112	71,556	99,065	75,379	75,567	102,511
Wyandot	338,809	326.206	323,912	320,515	413,367	326,353	313,215	331,047	286,275	352,924
Totals	12,789,451	11,826,237	11,426,576	11,762,687	11,681,242	13,512,413	12,992,842	13,017.052	13,104,374	11,877,503

Average for ten years, 12,399,037 pounds.

TABLE SHOWING THE NUMBER OF HORSES IN OHIO FOR TEN YEARS, INCLUDING CITIES AND RURAL DISTRICTS.

Counties.	Number of Horses.									
	1907.	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.
Adams	4,802	4,863	4,804	4,723	4,641	4,809	4,927	4,622	4,503	4,426
Allen	9,494	9,591	9,429	8,945	9,087	8,981	8,638	8,727	8,225	8,397
Ashland	7,541	7,350	7,471	7,768	7,571	7,180	7,020	7,104	6,999	7,009
Ashtabula	9,138	9,323	9,614	9,609	9,906	9,186	9,027	9,038	9,370	9,838
Athens	4,634	4,705	4,495	5,168	4,438	4,375	4,352	4,170	4,543	4,637
Auglaize	8,948	9,117	8,729	8,626	8,541	8,701	8,489	8,178	7,869	8,101
Belmont	8,295	8,403	8,112	8,094	8,508	8,597	8,689	7,551	8,228	8,480
Brown	6,692	6,592	6,362	459	6,420	6,542	6,504	6,714	6,591	6,567
Butler	11,367	11,107	10,784	10,435	10,440	10,417	10,092	10,350	10,472	10,677
Carroll	4,128	4,020	4,340	4,521	4,365	4,197	4,301	4,407	4,390	4,599
Champaign	10,584	10,623	10,640	10,400	10,453	10,429	10,102	10,143	9,969	10,080
Clark	11,329	11,485	11,213	10,915	10,899	10,593	11,171	11,412	11,004	11,371
Clermont	6,983	7,352	6,745	6,431	6,606	6,593	6,867	7,078	6,614	6,676
Clinton	9,599	9,436	9,347	9,459	9,568	9,356	8,890	9,022	8,755	9,002
Columbiana	9,552	10,164	9,700	9,927	10,024	9,489	9,784	9,389	9,384	9,503
Coshocton	6,587	6,582	6,127	5,720	5,968	5,814	5,763	6,013	6,607	6,904
Crawford	8,832	8,835	8,768	8,647	8,713	8,521	8,614	8,391	8,232	8,537
Cuyahoga	18,641	18,563	18,858	17,424	17,598	18,032	21,325	18,158	18,729	18,624
Darke	17,835	17,375	17,150	16,347	16,534	15,617	15,691	15,044	14,552	14,590
Defiance	6,933	6,826	6,582	6,078	6,352	6,261	6,131	5,812	5,941	6,460
Delaware	8,081	7,695	8,176	8,139	7,727	7,700	7,392	6,881	7,310	7,194
Erie	5,849	5,610	5,598	5,424	5,660	5,560	5,674	5,497	4,789	5,385
Fairfield	10,203	10,222	10,223	9,761	9,666	9,591	9,465	9,669	10,019	10,117
Fayette	9,767	9,550	9,486	9,033	9,289	8,979	8,888	9,059	8,782	9,120
Franklin	14,956	15,329	14,978	14,808	14,804	14,165	14,613	14,571	14,504	14,697
Fulton	7,154	6,847	6,950	6,883	7,269	7,362	7,744	6,915	7,112	7,013
Gallia	4,514	4,543	4,474	4,486	4,520	4,690	5,178	4,473	4,892	4,682
Geauga	5,309	5,160	5,102	5,134	5,248	5,262	5,258	5,232	5,315	5,351
Greene	10,025	9,936	10,028	9,659	9,757	9,878	9,504	9,958	9,734	10,229
Guernsey	5,140	5,244	5,007	4,928	5,094	5,463	5,210	5,359	5,427	5,676
Hamilton	16,143	16,675	16,115	16,483	16,498	16,625	17,044	16,847	17,799	18,169
Hancock	9,933	10,364	10,498	10,863	10,468	10,305	10,149	10,225	10,200	10,544
Hardin	9,060	8,968	8,916	8,304	8,130	7,694	7,580	7,793	6,960	7,361
Harrison	4,800	4,998	5,092	4,854	4,988	4,827	5,081	4,741	4,671	4,798
Henry	7,478	7,391	7,157	6,833	7,085	6,987	6,728	5,578	6,678	6,481
Highland	8,632	8,371	8,390	8,166	8,437	8,538	8,379	8,177	8,027	8,284
Hocking	3,800	3,841	3,571	3,583	3,568	3,555	3,637	3,757	3,565	3,404
Holmes	6,874	7,150	6,825	7,292	7,132	6,786	6,594	6,807	6,851	6,491
Huron	8,437	8,545	8,111	7,907	7,855	7,877	7,871	10,056	8,183	8,171

Jackson	3,233	3,405	3,218	3,214	3,441	3,603	3,606	3,590	3,462	3,549
Jefferson	5,682	5,713	5,661	5,580	5,595	5,369	5,430	5,701	5,769	6,097
Knox	8,332	8,170	8,166	7,873	7,735	7,148	6,933	7,693	7,304	7,730
Lake	4,744	4,740	4,476	4,412	4,428	4,205	4,346	4,286	4,830	4,262
Lawrence	3,409	3,716	3,635	3,805	3,767	3,869	3,730	3,647	3,523	3,586
Licking	13,135	13,247	12,272	13,646	12,378	12,188	12,099	12,198	12,138	12,571
Logan	9,577	10,082	9,876	9,276	9,768	9,555	9,187	9,188	8,346	8,695
Lorain	9,853	9,846	9,410	9,132	9,172	9,101	8,938	8,803	9,097	9,099
Lucas	8,653	9,053	8,829	9,504	9,682	9,751	9,773	9,549	9,124	9,329
Madison	10,341	9,688	9,478	9,501	9,644	9,470	9,116	8,973	9,404	9,266
Mahoning	9,000	8,711	6,053	8,876	8,515	8,207	8,144	8,515	8,263	8,493
Marion	7,945	7,993	7,761	7,656	7,683	7,339	7,204	7,169	7,342	7,534
Medina	8,626	9,026	9,036	8,449	8,179	8,038	8,195	8,108	7,721	8,000
Meigs	4,009	4,280	4,261	4,506	4,603	4,792	5,028	5,197	5,304	5,345
Mercer	10,259	10,365	9,794	9,696	9,430	9,217	8,769	8,402	7,939	8,278
Miami	11,704	11,725	10,689	11,328	11,542	11,175	10,634	11,396	10,367	11,450
Monroe	4,637	5,042	4,925	5,036	5,268	5,030	5,464	5,174	4,754	4,965
Montgomery	16,154	16,007	15,719	15,698	16,140	15,117	16,156	16,310	15,759	16,757
Morgan	4,369	4,690	4,593	4,578	4,560	4,867	4,751	4,659	4,754	4,920
Morrow	7,911	7,713	7,503	7,350	7,388	7,270	7,253	7.734	7,262	7,200
Muskingum	9,004	9,032	9,090	9,092	8,903	9,204	8,938	8,967	9,374	9,739
Noble	4,118	4,556	4,440	4,392	4,583	4,602	4.256	4,048	4,183	4,183
Ottawa	5,437	5,363	5,210	5,564	5,395	5,683	5,156	5,413	5,265	5,255
Paulding	6,600	6,144	6,426	6,478	5,923	5,369	5,028	5,176	4,666	4,286
Perry	6.058	6,097	6,097	5,799	5,824	5,681	5,531	5,551	5,487	5,660
Pickaway	10,431	9,904	9,602	9,837	9,302	9,328	9,294	9,561	9,559	9,972
Pike	3,996	4,044	4,032	3,818	3,947	3,903	3,857	4,236	4,265	4,029
Portage	8,877	8,938	8,550	8,622	8,079	8,172	7,914	7,884	7,714	7,961
Preble	10,524	10,325	9,972	9,983	9,937	9,850	9,950	9,874	9,310	9,072
Putnam	9,417	9,688	8,874	8,987	8,953	8,572	8.209	8,151	8,470	8,433
Richland	9,248	9,064	9,225	9,203	8,935	8,909	8,838	8,594	8,698	8,671
Ross	10,514	9,085	9,659	10,236	10,255	9,982	9,990	10,522	10,477	10,934
Sandusky	9,166	8,413	8,618	8,760	8,686	8,376	7,984	8,434	8,430	8,325
Scioto	5,365	5,462	5,449	5,458	5,314	5,375	5.251	5,593	5,476	5,153
Seneca	10,214	10,071	10,001	9,484	9,207	9,202	8,788	9,145	8,971	9,083
Shelby	9,286	9,018	8,975	9,014	9,157	9,034	8,624	8.595	8,526	8,467
Stark	14,836	15,262	13,131	14,501	14,836	14,564	14,429	14,569	13,975	14,218
Summit	9,543	9,635	9,468	8,129	8,985	9,108	9,183	9,073	9,352	9,247
Trumbull	10,260	10,687	11,309	10,229	10.458	10.325	10,039	10,584	10,564	10,659
Tuscarawas	8,470	8,813	8,072	7,350	7,417	7,282	7,272	7,264	7,575	7,872
Union	8,282	8,452	8,067	8,459	8,190	8,023	7,692	7,630	7,277	7.408
Van Wert	8,964	8,729	8,651	8,422	8,184	8,748	8.345	8,250	7,789	8,571
Vinton	2,362	2,886	2,290	2,295	2,347	2,407	2,375	2,504	2,578	2,632
Warren	8,704	9,299	9,403	9,439	9,650	9,238	9,274	9.143	9,222	9.209
Washington	7,010	6,354	6,942	7,120	7,107	7,389	7,605	7.692	7,476	7,839
Wayne	11,514	12,220	12,191	12,267	11,911	11,500	11,068	10,821	10,888	11,115
Williams	7,350	7,238	7,447	6,931	6,579	6,489	6.165	6,256	6.377	6,277
Wood	11,025	11,265	11,565	11,278	10,808	11,744	10,874	11,256	10.933	11.731
Wyandot	7,902	8,006	8,078	7,705	7,407	7,534	7,339	7.150	6,971	6,962
Totals	744,119	746,016	730,156	726,204	725,024	716,558	712,500	711,146	704,165	717,734

TABLE SHOWING THE NUMBER OF CATTLE IN OHIO FOR TEN YEARS, INCLUDING CITIES AND RURAL DISTRICTS.

Counties.	Number of Cattle.									
	1907.	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.
Adams	9,197	9,900	10,346	10,467	10,615	10,432	10,603	10,384	9,716	9,114
Allen	15,732	16,496	16,014	15,690	17,614	15,799	14,861	15,177	13,640	13,224
Ashland	13,564	13,057	14,475	15,758	15,349	14,650	14,825	14,726	14,843	13,392
Ashtabula	27,369	29,290	30,385	32,186	32,201	28,882	30,024	28,448	27,478	26,726
Athens	16,125	9,933	9,597	10,069	10,370	11,070	10,320	11,217	12,099	11,218
Auglaize	16,369	17,237	16,426	16,972	17,168	16,232	15,901	15,224	14,587	13,224
Belmont	17,587	17,647	17,981	17,221	18,208	19,550	20,749	21,850	20,331	19,127
Brown	10,472	11,263	12,159	12,804	12,897	12,979	13,407	13,112	12,306	10,784
Butler	16,053	16,300	15,967	16,820	17,011	16,622	16,045	15,691	14,668	13,711
Carroll	11,248	11,626	12,030	12,939	13,654	12,941	18,009	13,248	12,785	11,814
Champaign	15,486	18,711	17,843	18,297	20,258	20,020	18,695	17,928	17,168	14,958
Clark	17,350	19,081	17,798	28,474	19,469	18,281	19,920	18,453	17,866	15,789
Clermont	11,008	11,089	10,331	9,987	10,435	10,657	9,761	10,567	9,500	9,081
Clinton	13,869	15,615	15,604	15,957	17,250	16,390	17,067	15,540	14,093	13,386
Columbiana	19,111	20,294	19,835	21,727	21,839	20,501	22,507	22,072	20,005	19,456
Coshocton	16,433	16,313	16,213	16,796	18,306	17,531	16,008	16,728	17,659	15,823
Crawford	15,906	17,274	16,837	16,164	17,080	16,532	16,933	17,348	16,018	15,229
Cuyahoga	13,487	14,713	14,989	15,977	16,615	16,247	16,322	16,631	16,142	15,768
Darke	23,931	25,104	23,671	25,269	26,928	25,889	24,319	23,039	22,213	20,591
Defiance	10,696	11,343	11,614	10,358	10,519	11,816	11,284	9,957	9,958	9,485
Delaware	17,265	17,522	19,047	20,074	21,196	19,133	17,362	16,669	15,929	15,766
Erie	7,218	7,816	7,732	7,762	8,418	7,911	7,902	7,873	6,934	7,223
Fairfield	20,381	21,590	21,888	21,140	22,346	21,930	20,766	21,365	19,474	17,210
Fayette	17,500	21,621	19,765	18,739	20,070	19,819	19,719	20,007	17,049	16,931
Franklin	19,777	20,845	20,242	20,763	21,037	20,767	19,672	18,662	18,427	17,587
Fulton	17,179	16,798	16,313	17,524	18,030	17,657	17,675	14,335	14,085	12,603
Gallia	8,960	9,400	9,843	10,366	11,491	11,741	13,179	11,956	11,900	10,328
Geauga	19,747	20,125	20,426	21,471	21,725	21,570	21,599	20,263	20,291	18,898
Greene	15,088	15,819	18,523	17,656	18,956	18,678	17,622	17,126	15,341	14,804
Guernsey	12,127	13,408	13,457	13,161	13,639	13,985	13,948	15,351	14,532	13,737
Hamilton	16,200	16,456	16,635	17,739	17,907	17,700	18,796	17,483	17,774	17,665
Hancock	20,187	22,696	23,370	25,100	24,472	23,179	22,154	22,223	20,698	19,716
Hardin	17,987	19,406	19,017	19,233	19,480	18,428	17,213	17,251	14,927	13,793
Harrison	10,182	10,591	10,628	10,568	11,415	11,222	12,204	12,025	11,934	11,497
Henry	12,759	13,568	13,433	14,294	15,427	14,675	14,173	12,895	12,111	11,191
Highland	17,648	20,213	20,463	20,046	20,462	20,189	19,921	18,774	16,577	15,639
Hocking	8,860	8,891	8,884	9,324	9,414	9,772	9,917	9,711	8,778	7,878
Holmes	15,726	16,754	16,094	19,271	17,978	17,862	17,108	18,241	17,486	15,455
Huron	12,615	13,763	14,132	15,138	15,685	15,214	14,326	14,779	14,224	13,026

Jackson	8,917	10,081	10,077	9,724	10,349	11,051	11,939	11,273	10,745	9,282
Jefferson	10,891	10,817	10,876	11,444	11,962	12,035	13,597	12,773	10,692	11,450
Knox	16,676	17,694	18,243	18,449	20,317	17,625	16,362	18,807	17,136	15,862
Lake	6,370	7,276	7,479	7,680	7,727	7,588	7,572	7,189	6,969	6,444
Lawrence	7,821	7,775	8,167	8,734	9,607	9,418	9,839	9,320	8,377	7,642
Licking	25,700	28,536	28,674	29,828	30,307	28,430	26,757	26,760	25,370	22,868
Logan	16,139	17,734	17,629	18,437	20,257	19,772	19,144	18,828	17,020	15,205
Lorain	20,613	21,823	21,224	22,170	23,903	23,163	23,410	22,139	21,185	20,138
Lucas	9,463	9,625	9,876	10,268	10,140	10,039	9,744	9,317	8,588	8,189
Madison	18,735	21,432	20,936	19,876	24,032	24,111	21,223	19,470	17,498	24,308
Mahoning	18,240	18,874	16,429	19,736	19,589	18,925	17,578	18,384	16,700	15,942
Marion	14,215	15,251	15,223	15,681	17,333	16,693	14,781	15,185	15,232	13,264
Medina	15,664	16,738	17,131	17,891	18,134	17,011	18,043	17,394	15,320	15,631
Meigs	8 078	8,956	9,452	9,688	10,010	10,696	11,277	10,748	10,778	10,280
Mercer	17,001	18,188	18,135	18,763	18,125	17,449	16,586	15,712	15,285	14,343
Miami	13,792	14,956	14,205	15,928	16,064	15,370	14,305	14,523	13,690	12,961
Monroe	11,617	12,023	11,771	11,555	12,203	12,570	14,040	12,460	13,115	11,866
Montgomery	18,867	19,381	18,897	19,738	20,915	21,289	20,540	19,791	19,444	18,376
Morgan	11,389	12,114	11,999	11,918	13,043	13,572	13,632	13,308	13,098	12,371
Morrow	3,038	14,520	15,292	15,294	15,837	15,017	14,106	15,035	14,847	13,285
Muskingum	21,700	22,181	23,023	23,915	24,525	25,389	24,663	24,316	24,002	22,494
Noble	13,365	14,381	14,866	13,864	14,581	14,834	13,904	14,312	14,206	12,613
Ottawa	7,843	8,542	8,198	8,960	9,040	9,155	9,008	8,792	7,968	7,491
Paulding	6,524	6,846	7,296	8,342	8,369	8,134	7,711	6,459	5,727	4,901
Perry	13,275	14,426	14,471	13,776	13,791	15,582	15,601	15,318	14,053	13,039
Pickaway	20,528	22,560	21,824	20,086	22,990	22,087	21,967	20,121	18,678	18,244
Pike	5,825	6,543	6,567	6,418	6,782	6,394	6,197	6,143	5,623	4,849
Portage	18,746	21,147	21,339	22,665	22,266	22,656	21,076	21,311	20,181	19,532
Preble	16,240	17,341	17,035	18,367	18,824	17,719	17,440	16,086	15,281	14,072
Putnam	16,239	17,892	17,672	19,328	19,704	18,788	17,194	16,822	16,118	14,354
Richland	17,369	17,049	18,650	18,906	18,817	17,985	17,281	17,095	16,063	15,039
Ross	19,570	21,241	19,469	20,744	22,299	22,662	21,793	21,124	19,197	17,482
Sandusky	13,559	13,739	14,212	14,966	15,800	15,396	13,491	14,289	13,362	12,977
Scioto	8,760	9,010	9,057	8,854	9,200	8,925	8,406	8,815	8,858	7,624
Seneca	17,442	18,545	18,813	19,423	19,292	17,063	16,203	17,133	15,206	14,215
Shelby	13,548	15,680	15,500	16,447	16,096	16,147	15,099	16,091	14,730	13,334
Stark	25,253	26,237	22,303	26,212	26,580	27,542	28,702	28,652	26,352	25,383
Summit	19,873	19,236	19,510	20,067	20,585	20,154	20,929	21,465	20,250	19,287
Trumbull	26,594	26,594	26,849	29,922	30,676	31,628	32,511	32,350	31,500	29,374
Tuscarawas	19,618	20,561	20,485	20,230	20,720	21,091	20,826	21,139	20,400	19,579
Union	14,305	15,748	15,879	16,544	17,738	17,596	14,834	15,222	14,014	12,540
Van Wert	11,846	12 925	13,574	12,761	13,127	13,672	12,648	12,198	11,278	10,684
Vinton	5,953	5,753	6,193	5,988	6,031	6,407	6,685	6,646	6,685	5,766
Warren	12,602	13,929	14,551	15,261	18,072	16,851	17,373	15,524	13,425	12,194
Washington	14,070	14,112	14,591	14 629	15,333	16,934	17,413	17,771	17,236	15,884
Wayne	22,050	23,769	23,758	25,348	25,500	25,210	25,480	25,352	24,960	22,730
Williams	15,286	14,732	14,390	14,923	14,454	14,136	13,530	12,244	12,461	11,259
Wood	16,380	18 335	19,349	20,869	20,948	20,874	20,044	17,909	17,498	14,730
Wyandot	12,926	14,699	13,542	14,406	14,826	14,348	13,091	14,200	13,304	11,440
Totals	1,319,414	1,407,115	404,688	1,464,324	1,509,754	1,481,586	1,458,391	1,427,661	1,351,251	1,265,664

TABLE SHOWING THE NUMBER OF MULES IN OHIO FOR TEN YEARS.

Counties.	Number of Mules.									
	1907.	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.
Adams	318	299	233	234	218	223	193	190	181	189
Allen	134	153	108	99	92	85	91	102	112	98
Ashland	112	110	134	85	83	79	78	66	55	54
Ashtabula	48	49	32	26	20	25	40	35	42	41
Athens	81	77	87	123	113	95	141	119	133	170
Auglaize	162	151	148	102	113	111	118	114	133	148
Belmont	212	256	316	502	428	368	440	374	313	370
Brown	303	315	332	322	274	229	201	199	209	213
Butler	604	522	514	508	521	433	404	472	450	453
Carroll	97	73	84	74	81	67	59	63	72	62
Champaign	395	361	332	295	222	219	151	169	148	143
Clark	487	501	475	392	375	276	232	201	190	299
Clermont	536	550	565	491	566	534	520	489	546	569
Clinton	530	626	507	456	380	344	288	296	310	322
Columbiana	226	182	189	142	103	73	71	62	66	85
Coshocton	159	174	157	162	166	139	128	159	159	111
Crawford	165	138	145	141	128	113	97	69	68	79
Cuyahoga	114	107	106	62	59	63	42	49	57	114
Darke	402	387	377	384	317	327	285	287	280	317
Defiance	65	55	62	49	58	70	71	59	59	75
Delaware	163	230	159	132	96	90	260	57	57	55
Erie	20	20	11	16	14	9	13	15	7	22
Fairfield	185	208	175	148	170	138	119	130	124	134
Fayette	356	385	458	310	269	267	197	174	166	152
Franklin	370	401	297	160	160	103	131	113	101	131
Fulton	23	35	30	22	30	30	33	27	30	24
Gallia	158	153	170	166	178	136	145	207	207	234
Geauga	63	32	33	26	24	35	29	26	30	32
Greene	411	338	316	281	263	230	188	183	172	173
Guernsey	337	345	350	340	277	234	201	190	237	219
Hamilton	1,063	1.092	1,014	935	1.017	1,014	1,242	1,112	1.107	1,271
Hancock	68	63	66	50	63	61	71	83	80	99
Hardin	134	123	113	106	95	72	77	88	83	101
Harrison	118	94	103	121	57	54	75	66	83	53
Henry	74	72	53	82	78	77	77	79	89	73
Highland	458	383	306	300	105	69	54	64	60	54
Hocking	79	74	70	64	56	56	61	66	53	67
Holmes	62	64	59	54	375	190	225	219	214	207
Huron	84	76	88	74	78	60	62	49	58	95

Jackson	419	834	806	764	768	762	855	836	820	830
Jefferson	88	359	342	361	364	237	163	186	255	195
Knox	137	171	182	140	126	124	109	114	116	115
Lake	24	24	13	4	13	8	14	5	9	13
Lawrence	427	494	408	510	491	537	519	546	491	494
Licking	196	210	168	169	143	147	112	101	112	100
Logan	230	163	143	121	103	89	79	81	74	84
Lorain	100	26	22	40	36	33	30	50	38	76
Lucas	40	44	47	38	64	73	51	98	116	137
Madison	348	334	284	284	302	210	191	225	240	254
Mahoning	202	187	110	97	97	81	78	77	84	104
Marion	187	184	161	175	169	167	137	186	123	114
Medina	84	194	78	109	155	107	116	107	93	125
Meigs	243	243	224	233	214	200	188	210	218	222
Mercer	161	145	165	152	128	126	125	120	119	132
Miami	475	413	385	370	289	276	211	233	249	234
Monroe	46	54	56	59	69	68	66	59	48	88
Montgomery	440	373	353	280	276	243	227	246	215	227
Morgan	55	38	35	39	26	38	38	41	45	52
Morrow	99	96	68	66	71	45	42	42	53	62
Muskingum	254	215	178	183	182	161	163	153	167	171
Noble	54	50	35	34	34	44	40	52	60	57
Ottawa	32	46	45	48	50	47	33	39	40	14
Paulding	100	72	96	84	65	64	59	48	29	41
Perry	70	74	70	136	122	150	110	106	95	100
Pickaway	322	332	294	335	347	304	301	281	311	280
Pike	259	217	218	205	177	172	169	190	195	203
Portage	60	82	165	111	77	101	86	70	98	91
Preble	557	419	388	353	346	413	339	320	271	255
Putnam	93	104	79	63	54	61	59	55	64	50
Richland	194	157	162	140	150	133	137	114	121	142
Ross	203	195	220	181	156	158	153	132	156	149
Sandusky	51	36	39	44	38	47	47	50	43	53
Scioto	600	573	612	519	528	571	571	603	641	631
Seneca	147	158	142	130	74	91	58	69	61	63
Shelby	79	78	107	109	115	119	80	87	81	89
Stark	264	311	289	315	369	361	329	351	331	327
Summit	108	114	130	116	95	208	99	97	105	88
Trumbull	147	119	88	77	82	58	92	94	159	98
Tuscarawas	162	191	168	225	229	219	144	118	159	113
Union	131	103	102	104	95	75	45	45	30	36
Van Wert	177	191	234	202	191	221	186	168	156	152
Vinton	185	119	149	125	112	106	101	97	101	106
Warren	476	470	447	442	388	381	378	397	403	389
Washington	139	....	150	150	143	158	177	191	178	171
Wayne	296	339	308	281	227	180	152	167	181	182
Williams	96	76	55	58	42	30	31	40	57	57
Wood	89	98	94	78	64	71	66	94	80	101
Wyandot	171	187	159	131	105	124	61	60	76	55
Totals	18,893	18,986	18,047	16,990	16,283	15,197	14,530	14,373	14,508	15,030

TABLE SHOWING NUMBER OF SHEEP IN OHIO FOR TEN YEARS.

Counties.	Number of Sheep.									
	1907.	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.
Adams	7,072	6,343	6.448	5,404	5.890	7.598	8,857	9.068	8.784	7,997
Allen	20,580	18,199	15.848	16,380	17.487	19.205	20,732	20,707	19,193	17,705
Ashland	37,271	36,714	31,538	33,382	34,314	36,243	37.308	36,876	36.114	32,885
Ashtabula	7,700	7,206	6.606	8,829	10,972	12,693	14,735	16,575	19,188	18,374
Athens	40,480	41,611	39.278	41.739	42,075	46,063	47,649	46.086	43,879	40,478
Auglaize	8,506	7,224	6,738	7,163	8,614	10,128	11,551	12,011	11,811	9,568
Belmont	72,593	85,143	58.818	63,307	65,923	72,968	84.037	84.760	76.512	72.991
Brown	7,362	7,081	7,169	6.752	7,139	9.579	12,327	12,814	12.315	12,225
Butler	8,575	7,345	6,485	6,712	7,232	7.586	9,471	9,980	10,687	7,482
Carroll	52,501	52,171	49.074	51,575	50,675	52,082	57,992	59,301	62,660	60,888
Champaign	22,651	21,718	19.793	15,993	17.991	21,929	29,264	23.475	22.419	23.873
Clark	23.617	20,909	20,675	20,522	20,003	22,440	29,095	23,829	28.602	27,449
Clermont	3,734	3,542	3.022	3,654	4,375	6.742	8,067	7,713	7,383	6,647
Clinton	16,339	15,357	15.217	15,217	16.996	22,404	25,313	25,787	24,605	25,474
Columbiana	24.493	25,331	22,080	24,750	26.758	30,127	35.700	36,361	36,622	36.705
Coshocton	89,785	80,962	75.654	74,759	72,661	74.752	75,909	77,362	81,371	78,952
Crawford	48,769	45,676	39.555	42,133	40,976	42,153	45,952	45,257	34.768	42,534
Cuyahoga	4,657	4,302	3,911	4,711	5,496	6.344	6,838	7,119	7,022	6,757
Darke	5.444	4,649	4.532	4,519	6,144	7,338	7,717	7.754	6.753	6.870
Defiance	14,835	14,266	12.530	13,889	14,724	15.996	15,973	14,494	14,071	13,056
Delaware	46.509	43,583	42,664	37,711	38,526	45.189	46,228	44,578	44,202	42,646
Erie	10,654	9,467	9.427	9,908	10,691	11,942	12,909	12,924	10,943	12,575
Fairfield	15,014	14,517	11.736	12,055	13,780	15.456	16,673	18.443	16,925	16,736
Fayette	10,689	9,969	7,659	7,720	9,710	11,333	13,296	13,555	14,537	13,117
Franklin	10,201	8,795	8.444	9,624	10,507	11,422	12,558	12,761	11,953	11,042
Fulton	15,306	14,367	13.518	15,455	16,952	19.898	23,345	21,126	21,644	20,278
Gallia	12,493	11,493	10,658	9,092	9,144	11,210	13,517	13,930	15,425	14,788
Geauga	5,099	4,598	4.469	5,553	7,013	9.577	10,936	12,056	14,287	14,956
Greene	16,018	14,877	15.599	15,511	15,642	18,548	20,321	18,665	18,188	16,860
Guernsey	69,618	67,202	63,849	60,549	61,659	67,245	72,855	74,621	74,087	69,769
Hamilton	2,262	1,968	1.786	1,107	1,992	2,518	2,673	2,139	2,590	2,188
Hancock	37.222	36,567	34.189	36,130	36,428	38,265	38,764	36,400	35,355	33,086
Hardin	42,124	37,223	31,947	31,144	31,798	33,553	34,503	36,006	33,192	32,848
Harrison	107,365	102,736	95.406	91,171	94,425	96,304	103,812	104,134	103,803	100,162
Henry	7,007	6,460	5.776	6,926	7,748	8,156	9,080	8,722	8.628	8,787
Highland	17,959	16,025	17,456	13,327	14,690	19,975	25,466	25,591	23,817	21,075
Hocking	14,041	12,800	13.396	14,121	13,911	16,243	17,198	17,293	16,215	15,673
Holmes	26,727	26,569	24.428	23,733	23,705	25,190	29,802	31,245	30,336	27,926
Huron	52,159	52,775	45,977	48,254	47,172	52,417	57,582	53,312	53,931	53,508

Jackson	3,582	3,738	3,829	4,501	5,650	7,738	8,304	8,889	8,617	8,955
Jefferson	44,036	43,308	40,593	42,774	45,023	49,160	55,219	60,433	56,998	56,636
Knox	116,250	104,455	99,078	96,505	95,822	91,063	90,537	95,698	90,645	84,764
Lake	3,998	4,055	3,610	3,792	4,460	5,750	6,087	6,456	7,431	7,377
Lawrence	1,442	1,431	1,414	1,499	1,711	2,590	3,456	3,350	3,109	3,128
Licking	101,573	98,380	85,580	89,546	90,760	96,295	99,427	94,483	93,434	92,214
Logan	32,564	30,699	25,986	26,623	29,343	31,790	35,363	36,862	34,405	31,371
Lorain	15,893	16,206	15,518	16,272	18,774	22,914	25,437	26,753	27,280	24,447
Lucas	2,005	1,707	1,492	1,873	1,993	2,699	3,026	3,339	3,259	3,191
Madison	22,108	20,228	15,653	15,131	15,842	21,985	24,963	26,540	27,555	28,991
Mahoning	17,134	17,027	13,954	17,168	18,557	21,674	21,346	24,992	29,506	29,815
Marion	53,745	50,394	44,210	46,277	48,701	49,401	66,661	57,811	59,518	54,174
Medina	21,877	21,970	19,339	21,705	23,098	26,629	30,381	31,042	32,743	32,415
Meigs	25,064	24,172	25,364	24,350	22,593	26,627	29,923	30,263	30,244	28,357
Mercer	11,071	10,805	8,939	9,032	10,193	12,746	14,933	14,827	13,977	11,980
Miami	2,215	2,778	1,737	2,647	3,347	4,085	3,872	4,516	4,871	4,902
Monroe	10,431	10,451	9,641	9,109	9,326	13,420	16,397	17,735	17,826	16,441
Montgomery	2,915	2,227	1,991	2,069	2,500	3,096	3,097	3,216	3,058	3,128
Morgan	64,451	65,381	59,973	55,758	54,973	62,039	69,100	68,079	65,214	59,079
Morrow	70,085	67,090	61,756	61,644	72,400	62,114	66,165	66,318	63,701	60,362
Muskingum	91,237	86,791	85,334	81,016	82,556	85,691	92,223	89,319	88,069	83,589
Noble	51,018	50,839	49,698	45,358	48,434	56,170	57,012	56,668	53,167	45,822
Ottawa	5,386	5,641	4,408	4,787	4,918	5,174	5,370	4,991	5,265	5,148
Paulding	9,237	7,642	7,436	6,938	8,095	8,912	9,676	8,626	6,929	6,034
Perry	29,306	26,775	25,346	26,038	28,265	29,497	32,360	29,087	27,497	25,817
Pickaway	7,994	6,327	6,063	6,027	6,886	8,899	11,223	10,625	9,994	9,471
Pike	3,891	3,900	3,762	3,704	4,089	4,525	4,450	4,602	4,991	3,890
Portage	15,918	15,041	13,249	15,343	16,982	20,883	23,790	25,446	25,406	26,989
Preble	6,381	5,157	3,866	5,031	5,290	6,081	6,567	7,599	7,702	7,190
Putnam	13,579	11,328	10,143	9,851	10,979	12,670	13,316	13,403	12,452	10,384
Richland	41,917	39,422	34,854	37,747	39,248	39,780	42,859	41,787	42,352	39,912
Ross	9,567	8,754	8,075	7,890	9,004	10,205	12,196	11,785	12,254	12,277
Sandusky	15,357	13,685	13,528	14,585	15,195	17,107	15,923	16,079	17,294	19,095
Scioto	858	931	1,128	1,767	1,809	2,067	2,059	1,964	1,762	1,814
Seneca	37,507	38,999	35,049	35,427	35,498	37,416	35,708	36,001	33,581	32,726
Shelby	5,554	5,020	4,573	4,300	7,848	7,545	7,177	8,295	8,385	7,287
Stark	15,573	15,443	11,194	15,283	16,565	19,971	22,386	24,829	25,680	26,230
Summit	5,189	4,936	4,588	5,416	6,722	7,560	9,140	9,312	9,526	9,986
Trumbull	14,474	13,719	12,206	13,367	16,540	21,933	25,130	27,658	29,016	29,893
Tuscarawas	29,808	28,333	26,276	26,686	27,644	29,198	32,772	33,977	33,801	32,639
Union	39,447	37,411	32,165	29,830	32,485	38,553	43,180	44,732	42,011	43,616
Van Wert	11,650	11,082	10,088	10,394	11,674	13,833	15,236	14,962	14,083	13,338
Vinton	16,632	15,150	15,685	16,075	17,615	19,713	19,675	19,658	18,380	19,097
Warren	6,628	5,237	6,378	6,136	5,860	9,051	11,239	12,336	12,965	11,965
Washington	29,344	27,807	27,711	26,282	27,433	32,679	37,390	40,064	40,706	37,824
Wayne	18,429	19,534	17,211	17,421	19,521	22,210	25,570	24,770	26,481	25,571
Williams	25,743	25,324	22,582	25,722	25,877	29,046	28,056	25,539	28,043	24,466
Wood	12,814	11,951	11,032	14,681	14,642	18,528	19,500	16,657	17,745	17,586
Wyandot	65,830	63,589	58,913	60,090	62,773	60,595	65,940	66,852	59,986	56,245
Totals	2,294,138	2,200,010	2,005,553	2,033,072	2,127,451	2,331,078	2,546,772	2,544,070	2,512,761	2,404,558

TABLE SHOWING THE NUMBER OF HOGS IN OHIO FOR TEN YEARS.

Counties.	Number of Hogs.									
	1907.	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.
Adams	9,890	7,488	7,943	8,899	10,478	8.269	8,621	10,346	12,243	14,202
Allen	31,441	23,123	22,416	21,911	23,354	26,238	24,351	23,449	23,517	26.638
Ashland	17,229	13,147	15,016	19.392	20,808	17,925	26,717	15,535	17,814	20.348
Ashtabula	4,314	3,521	4,163	5,247	5,465	4,915	4,031	3,661	4,684	5,072
Athens	3,074	2,245	2,052	2,945	2,954	2,855	2,978	3,444	3,837	4,900
Auglaize	29,906	23.192	22,278	22.179	22,407	25,091	25,759	25,531	25,107	28,210
Belmont	8,994	7.840	7,208	9,105	9,758	9,735	9,441	10,805	11,641	14,551
Brown	21,219	16,088	16,558	20,849	20,069	18,436	19,960	21,708	25,107	28,210
Butler	25,266	18,938	20,804	24,376	21,780	24,417	22,381	20,758	21,164	25,868
Carroll	7,859	6,333	7,113	8,509	9,102	8,727	7,680	8,276	9,805	10,112
Champaign	33.375	29,004	34,731	35,287	34,498	33,409	31,758	29,921	27,768	34,408
Clark	28,089	23,167	24,743	25,400	25,059	24,056	22,888	26,571	26,786	29,464
Clermont	14,540	11,112	11,460	13,798	14,549	15,012	15,667	16,014	17,946	20,921
Clinton	48,242	37,179	38,220	36,826	37,210	38.230	40.795	38,493	33,538	37,957
Columbiana	10,213	9,225	10,518	12.596	11,927	11,359	10,642	11,376	11,511	12,920
Coshocton	14,898	10,696	9,812	12.535	15,736	14,056	11,338	13,022	15.525	17,151
Crawford	27,878	28,265	22,780	24,216	30,261	32,416	29,198	28,801	27,651	34,786
Cuyahoga	2,140	1,996	2,185	2,610	2,794	2,526	1,903	2,047	2,176	2,627
Darke	41,585	34,942	39,334	40,934	39.670	38,755	35,686	34,228	33,879	42,210
Defiance	16,544	13,548	16,683	15,243	15,360	14,923	14,494	13,747	13.309	16,233
Delaware	20,658	14,334	17,751	23.375	24,420	24,887	22,944	21,726	23,346	26,111
Erie	6,873	5,837	6,415	7,209	7,235	7.410	6,474	6.080	4,021	8,205
Fairfield	35,563	28,556	29,035	32,465	31,158	31,248	33,755	37,733	38,008	41,284
Fayette	42,954	35,309	35,464	32,777	29,967	33,234	37,185	36.132	32,067	41,369
Franklin	23,883	20,840	23,003	23,624	22.138	22,735	22,747	27,162	28,276	29,743
Fulton	20,821	18,571	22,688	22,956	21,298	22,133	19.773	16,711	17,321	21,821
Gallia	4,760	3,755	4,081	5.344	5,454	5,512	6,803	6,540	7,387	9,020
Geauga	3,889	3,300	3,333	4.183	4,368	4,423	3,532	3.327	4,404	4,731
Greene	31,782	25,577	28,985	30,661	30,099	27,736	25,211	25,768	29,709	32,456
Guernsey	5,737	4.913	4,031	5,647	6,826	6.138	5,686	6,497	7,038	9,630
Hamilton	9,089	7,936	8,348	9,431	9,865	10,307	10,521	11,060	12,039	11,884
Hancock	37,324	28,980	34,198	36,663	33,075	33,971	31,449	34,126	37,999	43,340
Hardin	32,125	21,024	28,449	32,062	31,859	31,932	28,904	29,292	25,070	31,491
Harrison	5,277	4,487	4,140	5,404	6,209	5,959	5,010	5.307	6,150	7,741
Henry	18,134	14,849	18,167	18,743	18.494	17,962	17,871	19,022	18,298	17,240
Highland	39,283	30.939	28,899	32,627	32,731	34,104	34,570	33,435	33,687	27,277
Hocking	5,267	4,654	4,078	5,309	5,643	5,260	6,265	5,942	5,967	6,937
Holmes	18,572	14,833	15,738	18,154	22,529	20,669	18,905	18,486	20,049	22,716
Huron	13,726	10,148	11.203	14,252	15,649	14,677	10,913	11,196	13,051	15,701

Jackson	3,177	3,178	3,012	3,446	3,557	3,456	3,743	3,921	4,542	5,411
Jefferson	5,772	4,932	4,966	5,811	6,093	5,625	5,120	6,762	6,836	8,488
Knox	19,351	15,464	16,253	21,090	24,363	20,511	17,249	18,794	21,351	25,911
Lake	1,658	1,289	1,546	2,057	2,031	1,580	1,453	1,295	1,606	1,840
Lawrence	3,567	3,143	3,050	4,078	4,505	3,471	4,035	4,549	4,947	5,478
Licking	28,788	22,224	23,269	28,555	30,896	29,162	27,622	31,544	34,194	38,247
Logan	34,870	24,659	27,000	29,309	30,840	29,538	27,753	26,993	26,795	31,345
Lorain	8,089	6,412	7,001	8,412	9,433	8,401	7,123	6,434	7,799	8,955
Lucas	7,456	6,604	8,952	9,023	9,097	8,176	7,799	7,020	1,369	9,169
Madison	41,010	30,803	34,646	33,243	36,882	35,342	37,220	34,730	34,543	39,594
Mahoning	8,003	7,123	7,058	7,457	8,305	7,685	6,963	7,423	7,747	9,087
Marion	30,540	22,541	27,005	29,900	30,518	39,278	23,999	24,114	21,406	26,489
Medina	9,959	8,303	9,173	11,075	11,072	10,943	9,156	7,994	9,667	11,101
Meigs	2,413	1,810	2,276	3,272	3,180	3,211	3,433	4,094	4,733	5,882
Mercer	30,234	23,805	25,056	27,180	26,858	27,107	25,618	22,584	27,533	31,420
Miami	18,145	14,985	15,918	20,090	18,233	17,891	14,785	16,737	19,122	21,269
Monroe	5,637	4,904	4,304	5,202	5,927	4,779	5,369	5,964	5,469	7,119
Montgomery	23,895	20,038	21,598	23,584	22,406	22,094	19,609	20,740	21,663	23,871
Morgan	4,682	3,769	3,753	4,936	5,031	4,667	4,550	4,552	5,272	7,440
Morrow	13,556	9,184	12,173	15,843	16,282	14,772	14,031	14,156	16,239	18,806
Muskingum	10,578	8,729	9,369	11,142	12,277	11,442	11,041	11,578	13,518	16,037
Noble	5,649	5,079	4,362	6,072	7,459	6,711	5,810	6,733	7,743	10,191
Ottawa	6,118	5,112	7,909	8,089	8,070	8,444	6,958	7,499	9,885	10,917
Paulding	11,634	9,205	10,816	8,331	11,643	11,382	11,149	11,324	8,802	10,049
Perry	9,758	7,891	8,028	9,117	9,589	9,037	8,748	9,201	10,692	12,267
Pickaway	33,246	25,420	26,869	24,644	26,068	26,627	28,331	30,706	29,475	30,628
Pike	7,166	5,741	5,778	6,573	7,165	6,287	5,771	6,795	7,417	8,877
Portage	6,694	6,249	6,850	8,085	7,553	7,301	6,016	6,123	7,614	8,675
Preble	37,395	29,095	30,869	33,080	29,481	30,655	30,295	27,858	31,056	33,693
Putnam	34,823	28,216	31,409	30,199	28,801	38,567	37,319	35,974	34,399	35,755
Richland	19,378	17,181	18,763	23,617	25,275	23,770	20,916	19,451	21,348	25,656
Ross	32,532	23,852	22,941	25,372	25,215	24,744	24,698	26,006	24,136	36,408
Sandusky	19,666	17,322	22,084	19,872	15,188	16,178	11,820	20,339	23,541	23,559
Scioto	6,897	6,038	6,251	7,377	7,512	6,041	5,805	7,420	8,347	7,677
Seneca	33,693	28,890	32,238	29,925	28,913	28,034	22,680	27,644	34,403	40,672
Shelby	24,052	15,355	17,133	19,803	16,412	19,769	18,055	18,815	20,432	26,208
Stark	20,352	17,353	16,707	21,938	22,993	23,199	21,328	21,685	22,508	26,341
Summit	9,184	7,412	7,967	9,300	9,690	9,391	8,213	7,786	9,294	11,056
Trumbull	5,965	5,378	6,259	6,795	6,276	6,245	6,008	5,519	6,579	6,953
Tuscarawas	12,405	10,909	11,170	11,612	13,083	13,070	11,812	12,450	13,477	17,004
Union	34,615	24,029	28,386	32,119	34,069	33,642	29,275	29,010	25,952	28,953
Van Wert	27,842	22,747	23,653	24,236	23,198	23,021	24,339	25,051	22,973	24,963
Vinton	2,258	1,666	1,729	2,109	2,214	2,111	2,097	2,248	3,393	3,324
Warren	23,961	19,852	19,281	20,226	20,433	27,501	21,948	22,537	23,562	28,459
Washington	6,030	3,882	5,026	6,623	6,221	6,073	6,382	6,870	7,608	9,808
Wayne	23,763	19,692	22,529	27,830	27,953	26,695	25,329	24,135	27,255	31,690
Williams	23,086	18,039	21,088	23,758	22,834	23,281	20,689	19,455	16,949	19,888
Wood	30,086	26,475	31,460	32,096	31,178	30,621	29,371	32,500	34,026	37,612
Wyandot	28,682	23,543	25,229	29,062	29,148	27,240	23,692	23,132	25,378	27,400
Totals	1,620,723	1,295,413	1,404,185	1,536,308	1,553,676	1,556,435	1,467,331	1,489,518	1,549,552	1,794,014

ABSTRACTS FROM REPORTS OF COUNTY AGRICULTURAL SOCIETIES FOR 1907.

TABLE I—COUNTY FAIRS IN OHIO FOR 1907.

County.	President.	Postoffice.	Treasurer.	Postoffice.
Adams	W. S. Kincaid	West Union	H. W. Dickinson	West Union.
Allen	Jno. W. Shanahan	Lima	Kirby White	Harrod.
Ashtabula	H. A. Mixer	Ashtabula	C. C. Babcock	Jefferson.
Athens	S. F. Beverage	Chauncey	E. R. Walker	Athens.
Auglaize	Charles Frasier	Wapakoneta	T. E. Bowsher	Buckland.
Belmont	John S. Cochran	St. Clairsville	W. T. Judkins	Maynard.
Brown	V. K. Thompson	Georgetown	B. M. Marshall	Georgetown.
Butler	J. A. Slade	Hamilton, R. R. 3	W. B. Wallace	Oxford.
Carroll	J. H. Roudebush	Carrollton	T. J. Saltsman	Carrollton.
Champaign	C. H. Ganson	Urbana	H. P. Wilson	Urbana.
Clark	H. L. Rockfield	Springfield	F. J. Johnston	New Carlisle.
Clermont	G. W. Burke	Bethel	J. O. Rapp	Owensville.
Clinton	J. R. Ross	Blanchester, R. F. D	W. C. Gregory	Blanchester.
Columbiana	J. M. LeVan	Columbiana	F. G. Bowman	Elkton.
Coshocton	H. T. Clark	Coshocton	Chas. McClain	West Lafayette.
Crawford	J. W. Stuckman	Bucyrus	W. A. Blicke	Bucyrus.
East Cuyahoga	E. C. Foote	Warrensville	George March	Chagrin Falls.
West Cuyahoga	D. G. Hoftiser	Olmstead Falls	W. G. Hutchinson	Berea.
Darke	L. N. Reed	Gettysburg	Ed. Ammon	Gordon.
Erie	C. F. Steen	Sandusky	George J. Doerzbach	Sandusky.
Fairfield	Joseph Shuman	Lancaster	C. B. Whiley	Lancaster.
Fulton	A. F. Shaffer	Wauseon	G. W. Howard	Wauseon.
Geauga	H. W. Pettibone	Chagrin Falls	F. H. Crittenden	Burton.
Greene	R. D. Williamson	Xenia	Chas. M. Austin	Bellbrook.
Guernsey	James W. Moore	Washington	B. S. Frame	Washington.
Hamilton	H. Lee Early	Home City	George E. Pfau	Hartwell.
Hancock	Marion Bell	Findlay	Grant Thomas	Findlay, R. F. D.
Hardin	Andrew Dodds	Belle Center	Isaac Draper	Kenton.
Harrison	George A. Martin	Cadiz, R. F. D.	Charles E. Stewart	Cadiz.
Hocking	Frank Adcock	Logan	T. D. Trimmer	Orland, R. F. D. No. 1
Jefferson	D. P. Sutherland	Smithfield	Chas. McKinney	Smithfield.
Lawrence	J. A. Bowen	Proctorville	E. J. Smith	Proctorville.
Licking	J. Willis Fulton	Newark	B. N. Sigler	Newark.
Logan	Noah Martin	Degraff, R. F. D.	S. L. Smith	Bellefontaine.
Lorain	W. E. Miller	Elyria	Arthur Doncaster	Elyria.
Lucas	M. P. Sanderson	Berkie, R. F. D.	J. L. Pray	Toledo.
Madison	L. W. Kilgore	London	M. L. Rea	London.
Mahoning	James S. Price	Youngstown	C. C. Fowler	Canfield.
Marion	D. H. Harvey	Marion	C. B. Jenkins	Marion.

Medina	Geo. L. Kehren	Brunswick, R. F. D.	F. E. Clark	Medina, R. F. D.
Meigs	A. W. Vorhes	Pomeroy	H. D. Ruzsell	Pomeroy.
Mercer	Sol Shock	Rockford	J. C. Brookhart	Celina.
Miami	W. F. Robbins	Piqua	J. N. McDowell	Troy.
Monroe	W. C. Mooney	Woodsfield	W. C. Mooney	Woodsfield.
Montgomery	S. D. Bear	Dayton	Alonzo Michael	Alexandersville.
Morgan	Benj. F. Reed	McConnelsville, R. F. D	George M. Foster	McConnelsville.
Morrow	E. E. Bunker	Marengo, R. F. D.	J. G. Russell	Mt. Gilead.
Muskingum	J. H. Frazier	Frazeysburg	A. F. Vest	Zanesville.
Noble	John McWilliams	Sarahsville	W. D. Merry	Sarahsville.
Paulding	Allen Bybee	Paulding	N. G. Sauerwein	Paulding.
Perry	John Meenan	New Lexington	W. A. Allen	New Lexington.
Pike	W. H. Patterson	Piketon	T. S. Rittenour	Piketon.
Portage	A. A. Galbreath	Mantua	George F. Douthitt	Ravenna.
Preble	Samuel Miller	Eldorado	C. F. Brooke Jr	Eaton.
Putnam	Geo. W. Simonds	Leipsic	Sam Cartwright	Ottawa.
Richland	W. H. Shyrock	Mansfield	John Hale	Mansfield, R. F. D, 3
Sandusky	J. J. Brim	Woodville	T. A. Lang	Fremont.
Scioto	D. T. Blackburn	Rarden	W. A. McGeorge	Mt. Joy.
Seneca	S. W. Rohrer	Tiffin	E. L. Valkmer	Tiffin.
Shelby	W. T. Johnston	Sidney	Thomas Quinlin	Swanders.
Stark	J. J. Snyder	Paris	H. A. Wise	Canton.
Summit	L. M. Kauffman	Clinton, R. F. D. 37	M. L. Sprankle	Bath.
Trumbull	Albert Brown	Warren	M. W. Laird	Middlefield.
Tuscarawas	E. L. Wenger	New Philadelphia	Edward Feil	Canal Dover.
Union	Homer Southard	Marysville	H. E. Moore	Marysville, R. F. D.
Van Wert	A. A. Giffin	Van Wert	E. B. Gilliland	Van Wert.
Warren	A. D. Smith	Lebanon	Phil Surface	Waynesville.
Washington	J. L. Jordan	Marietta	Charles W. Zimmer	Stanleyville.
Wayne	John C. McClaran	Wooster	W. A. Wilson	Wooster.
Williams	Jacob Faber	Bryan	C. A. Fyke	Bryan.
Wood	A. E. Royce	Bowling Green	J. G. Hickox	Bowling Green.
Wyandot	Z. T. Smith	Upper Sandusky	Peter Keller	Upper Sandusky.

COUNTY FAIRS IN OHIO FOR 1907—WITH TIME AND PLACE.

County.	Secretary.	Postoffice.	Time of Fair.	Place of Fair.
Adams	T. W. Ellison	West Union	Sept. 10, 11, 12 and 13	West Union.
Allen	C. A. Graham	Lima	Sept. 2, 3, 4 and 5	Lima.
Ashtabula	R. D. Sampson	Jefferson	Aug. 20, 21 and 22	Jefferson.
Athens	H. H. Haning	Athens	Aug. 13, 14 and 15	Athens.
Auglaize	A. E. Shaffer	Wapakoneta	Sept. 24, 25, 26 and 27	Wapakoneta.
Belmont	J. H. Taylor	St. Clairsville	Aug. 27, 28 and 29	St. Clairsville.
Brown	Lewis Richey	Georgetown	Oct. 1, 2, 3 and 4	Georgetown.
Butler	L. M. Larsh	Hamilton	Oct. 1, 2, 3 and 4	Hamilton.
Carroll	C. A. Tope	Carrollton	Oct. 8, 9, 10 and 11	Carrollton.
Champaign	J. W. Crowl	Urbana	Aug. 13, 14, 15 and 16	Urbana.
Clark	S. Van Bird	Springfield	Aug. 20, 21, 22 and 23	Springfield.
Clermont	A. S. Johnson	Amelia	Aug. 27, 28, 29 and 30	Boston (Owensville)
Clinton	B. E. Caney	Blanchester	Aug. 20, 21, 22 and 23	Blanchester.
Columbiana	E. F. Moore	Lisbon	Sept. 17, 18 and 19	Lisbon.
Coshocton	E. M. Hanlon	Coshocton	Oct. 8, 9, 10 and 11	Coshocton.
Crawford	Guy E. Smith	Bucyrus	Sept. 17, 18, 19 and 20	Bucyrus.
East Cuyahoga	F. C. Gates	Chagrin Falls	Sept. 3, 4, 5 and 6	Chagrin Falls
West Cuyahoga	O. R. Stone	Berea	Sept. 10, 11 and 12	Berea.
Darke	J. A. Tillman	Greenville	Aug. 26, 27, 28, 29 and 30	Greenville.
Erie	F. H. Zerbe	Sandusky	Sept. 10, 11, 12 and 13	Sandusky.
Fairfield	W. T. Clenaghan	Lancaster	Oct. 10, 11, 12 and 13	Lancaster.
Fulton	D. W. Williams	Wauseon	Sept. 17, 18, 19 and 20	Wauseon.
Geauga	W. S. Ford	Burton	Sept. 17, 18, 19 and 20	Burton.
Greene	R. R. Grieve	Xenia	Aug. 6, 7, 8 and 9	Xenia.
Guernsey	J. F. St. Clair	Washington	Sept. 24, 25, 26 and 27	Washington.
Hamilton	D. L. Sampson	Cincinnati, Wiggins Block	Aug. 13, 14, 15, 16 and 17	Carthage.
Hancock	Wm. Demland	Findlay	Sept. 18, 19, 20 and 21	Findlay.
Hardin	Arthur Evans	Kenton	Aug. 27, 28, 29 and 30	Kenton.
Harrison	E. B. Kirby	Cadiz	Oct. 1, 2, and 3	Cadiz.
Hocking	C. J. Wright	Logan	Aug. 8, 9 and 10	Logan.
Jefferson	J. O. Hayne	Smithfield	Sept. 24, 25, 26 and 27	Smithfield.
Lawrence	W. W. Reckard	Proctorville	Sept. 11, 12, 13 and 14	Proctorville.
Licking	J. M. Farmer	Newark	Oct. 1, 2, 3, 4 and 5	Newark.
Logan	E. P. Chamberlin	Bellefontaine	Aug. 20, 21, 22 and 23	Bellefontaine.
Lorain	Anthony Nieding	Elyria	Sept. 17, 18, 19 and 20	Elyria.
Lucas	C. R. Bowen	Toledo, 1819 Dunham	Oct. 8, 9, 10, 11 and 12	Toledo.
Madison	E. B. Pancake	London	Aug. 27, 28, 29 and 30	London.
Mahoning	B. L. Manchester	Salem	Sept. 24, 25 and 26	Canfield.
Marion	James A. Knapp	Marion	Sept. 24, 25, 26 and 27	Marion.
Medina	O. O. Van Deusen	Medina	Sept. 3, 4 and 5	Medina.
Meigs	H. C. Fish	Pomeroy	Sept. 11, 12 and 13	Rock Springs.
Mercer	S. J. Vining	Celina	Aug. 19, 20, 21, 22 and 23	Celina.
Miami	W. J. Tenney	Troy	Sept. 16, 17, 18, 19 and 20	Troy.
Monroe	Otto Mann	Woodsfield	Sept. 18, 19 and 20	Woodsfield.

Montgomery	W. J. Ferguson	Dayton	Sept. 2, 3, 4, 5 and 6	Dayton.
Morgan	George H. Black	McConnelsville	Sept. 24, 25 and 26	McConnelsville.
Morrow	G. J. Smith	Mt. Gilead	Oct. 1, 2, 3 and 4	Mt. Gilead.
Muskingum	R. J. White	Chandlersville	Aug. 27, 28, 29 and 30	Zanesville.
Noble	Homer Johnson	Sarahsville	Sept. 11, 12 and 13	Sarahsville
Paulding	W. B. Jackson	Paulding	Sept. 3, 4, 5 and 6	Paulding.
Perry	John R. Montgomery	New Lexington	Aug. 21, 22 and 23	New Lexington.
Pike	J. F. Bateman	Piketon	Aug. 14, 15 and 16	Piketon.
Portage	Lafayette Smith	Ravenna	Aug. 27, 28, 29 and 30	Ravenna.
Preble	L. C. Reynolds	Eaton	Sept. 9, 10, 11, 12 and 13	Eaton.
Putnam	A. P. Sandles	Ottawa	Oct. 1, 2, 3, 4 and 5	Ottawa.
Richland	W. H. Gifford	Mansfield	Sept. 24, 25, 26 and 27	Mansfield.
Sandusky	A. W. Overmyer	Fremont	Oct. 1, 2, 3 and 4	Fremont.
Scioto	W. A. McGeorge	Mt. Joy	Aug. 27, 28, 29 and 30	Mt. Joy.
Seneca	Morgan E. Ink	Republic	Sept. 3, 4, 5 and 6	Tiffin.
Shelby	J. E. Russell	Sidney	Sept. 10, 11, 12 and 13	Sidney.
Stark	J. H. Lehman	Canton	Sept. 24, 25, 26 and 27	Canton.
Summit	O. J. Swinehart	Akron	Oct. 1, 2, 3 and 4	Akron
Trumbull	C. F. Crooks	Spokane, R. F. D	Sept. 10, 11 and 12	Warren.
Tuscarawas	J. S. Karns	Canal Dover	Oct. 16, 17, 18 and 19	Canal Dover.
Union	W. F. Brodrick	Marysville	Sept. 10, 11, 12 and 13	Marysville.
Van Wert	E. V. Walborn	Van Wert	Sept. 10, 11, 12 and 13	Van Wert.
Warren	George W. Carey	Lebanon	Sept. 24, 25, 26 and 27	Lebanon.
Washington	Ed. Flanders	Marietta	Sept. 3, 4, 5 and 6	Marietta.
Wayne	G. J. Ebright	Shreve	Sept. 11, 12 and 13	Wooster.
Williams	C. C. Lattamer	Montpelier	Sept. 10, 11, 12, 13 and 14	Montpelier.
Wood	R. S. Sweet	Bowling Green	Sept. 23, 24, 25, 26 and 27	Bowling Green.
Wyandot	Willis P. Rowland	Upper Sandusky	Oct. 2, 3, 4 and 5	Upper Sandusky.

TABLE II—ENTRIES AND AWARDS.

Counties.	Horses—All breeds and classes except speed.			Speed Horses.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	257	$640 00	$608 00	......	....	....
Allen	95	751 00	305 00	70	$2,700 00	$2,684 00
Ashtabula	51	370 00	130 00	62	2,000 00	2,000 00
Athens	86	212 00	136 75	......	1,460 00	1,405 00
Auglaize	160	460 00	359 00	109	3,500 00	2,945 00
Belmont	78	361 50	175 00	70	1,300 00	842 50
Brown	304	628 00	621 00	......	....	....
Butler	531	1,246 00	829 80	150	4,000 00	3,207 50
Carroll	184	442 00	395 00	80	1,380 00	1,112 90
Champaign	104	426 00	230 00	143	3,460 00	3,130 00
Clark	123	903 00	433 00	95	3,900 00	3,532 50
Clermont	209	572 00	507 00	35	780 00	765 00
Clinton	58	281 00	205 60	46	1,800 00	1,150 00
Columbiana	91	367 00	241 00	33	1,200 00	1,050 00
Coshocton	96	1,128 00	414 50	82	3,500 00	2,300 00
Crawford	53	530 00	215 00	79	2,990 00	2,233 50
E. Cuyahoga	104	477 00	220 00	54	1,500 00	1,190 00
W. Cuyahoga	70	348 50	161 00	60	1,600 00	1,577 50
Darke	261	1,259 00	835 75	171	3,850 00	2,737 00
Erie	44	424 00	185 00	66	1,500 00	1,500 00
Fairfield	220	596 00	517 00	118	3,450 00	3,450 00
Fulton	84	475 00	264 00	32	1,500 00	1,351 00
Geauga	145	343 00	223 50	......	2,000 00	2,000 00
Greene	101	550 00	460 00	151	3,230 00	3,230 00
Guernsey	169	450 00	339 15	27	1,160 00	821 25
Hamilton	372	614 00	556 00	144	2,912 00	2,249 00
Hancock	110	877 00	379 00	54	1,960 00	1,565 00
Hardin	103	635 00	270 00	45	2,200 00	2,125 00
Harrison	129	....	291 00	17	1,300 00	1,112 50
Hocking	37	383 00	119 00	126	2,000 00	1,534 50
Jefferson	101	580 00	272 00	55	2,200 00	2,110 00
Lawrence	33	149 00	101 28	......	850 00	850 00
Licking	209	753 00	677 00	78	3,500 00	2,495 00
Logan	166	728 50	445 00	......	3,000 00	2,940 45
Lorain	......	450 00	223 50	......	1,950 00	1,319 87
Lucas	22	648 00	88 95	36	1,300 00	670 00
Madison	206	800 00	512 00	165	3,450 00	3,375 00
Mahoning	94	554 00	269 00	40	1,630 00	1,561 00
Marion	236	857 00	572 00	98	3,300 00	3,260 00
Medina	179	479 75	324 00	42	1,225 00	1,225 00
Meigs	79	536 00	387 00	......	950 00	950 00
Mercer	231	1,909 00	603 00	98	4,050 00	2,890 50
Miami	207	1,146 00	809 00	113	3,200 00	3,175 00
Monroe	43	364 00	202 00	65	2,100 00	2,075 00
Montgomery	239	1,026 00	757 00	88	5,400 00	5,112 50
Morgan	135	351 00	149 00	11	650 00	455 00
Morrow	142	557 00	375 00	55	2,600 00	1,510 00
Muskingum	104	726 00	365 00	94	2,850 00	2,170 00
Noble	46	310 30	134 75	15	400 00	400 00
Paulding	46	586 00	188 00	43	2,000 00	1,887 50

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Horses—All breeds and classes except speed.			Speed Horses.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Perry	74	$294 00	$190 00	30	$1,650 00	$850 00
Pike	47	394 00	112 25	46	1,550 00	925 50
Portage	71	314 50	179 00	41	1,200 00	960 00
Preble	231	993 00	591 30	157	3,150 00	2,864 25
Putnam	150	900 00	402 00	50	3,000 00	2,700 00
Richland	70	369 00	168 00	63	1,845 00	1,795 00
Sandusky	198	1,017 00	583 00	53	2,500 00	1,382 50
Scioto	74	338 00	240 50	43	1,790 00	1,339 50
Seneca	174	830 00	358 10	35	2,000 00	1,265 00
Shelby	80	641 50	407 00	45	2,650 00	2,554 47
Stark	184	842 00	589 00	37	1,500 00	1,470 00
Summit	230	668 50	532 00	70	2,850 00	2,850 00
Trumbull	129	319 00	191 00	80	1,920 00	1,446 00
Tuscarawas	15	160 00	84 00	65	1,600 00	1,260 00
Union	123	680 00	550 00	141	2,750 00	2,135 00
Van Wert	189	1,130 00	683 00	56	3,025 00	3,022 50
Warren	186	497 00	438 00	147	1,800 00	1,780 00
Washington	50	440 00	80 50	34	3,600 00	1,700 00
Wayne	113	466 00	264 50	35	1,750 00	1,705 00
Williams	185	475 00	247 00	60	2,375 00	1,750 00
Wood	122	583 00	313 00	57	259 50	229 50
Wyandot	26	288 00	114 00	......	2,500 00	1,491 25

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Cattle—All breeds and classes.			Sheep—All breeds and classes.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	53	$223 00	$191 00	19	$54 00	$54 00
Allen	88	771 00	257 00	128	308 00	126 00
Ashtabula	23	436 00	70 00	73	142 00	129 00
Athens	28	86 00	71 00	84	78 00	48 00
Auglaize	92	325 00	208 00	47	193 00	87 00
Belmont	51	400 00	168 00	74	224 00	197 00
Brown	48	291 75	119 75	61	165 00	142 50
Butler	55	582 00	286 20	109	357 00	321 30
Carroll	74	428 00	245 00	92	276 00	258 00
Champaign	84	382 00	275 00	199	364 00	322 00
Clark	21	729 00	107 00	202	501 00	429 00
Clermont	76	365 00	289 00	42	180 00	148 00
Clinton	85	335 00	238 00	24	127 00	53 00
Columbiana	50	372 00	149 00	106	339 00	181 00
Coshocton	199	1,019 00	629 00	227	624 00	605 00
Crawford	37	285 00	144 00	140	226 00	197 00
E. Cuyahoga	45	646 75	120 25	78	275 75	142 50
W. Cuyahoga	81	470 25	157 75	68	151 25	108 00
Darke	134	860 00	540 00	190	366 00	330 10
Erie	38	164 00	109 00	23	99 00	33 00
Fairfield	79	1,092 00	498 00	193	498 00	445 00
Fulton	101	591 00	180 00	168	391 00	180 00
Geauga	69	449 00	85 00	98	243 00	203 50
Greene	149	620 00	578 00	167	382 00	374 00
Guernsey	94	641 00	317 00	53	194 00	146 00
Hamilton	90	465 00	327 00	88	270 00	236 50
Hancock	32	415 00	126 00	127	294 00	239 00
Hardin	94	359 00	279 00	114	226 00	209 00
Harrison	39	....	114 00	59	....	81 00
Hocking	7	144 00	20 00	33	107 50	53 00
Jefferson	54	386 00	249 00	76	292 00	277 00
Lawrence	10	150 00	29 00	......	43 00	....
Licking	94	641 00	357 00	267	524 00	502 00
Logan	72	358 50	210 00	136	323 50	220 00
Lorain	......	450 00	216 50	......	425 00	169 00
Lucas	95	1,505 00	212 30	132	612 00	157 00
Madison	86	614 00	489 50	116	354 00	300 00
Mahoning	106	561 00	446 00	96	257 00	240 00
Marion	153	509 00	331 00	165	429 00	391 00
Medina	58	514 75	153 25	172	276 00	231 00
Meigs	48	263 00	149 00	33	90 00	55 00
Mercer	175	1,410 00	586 00	169	672 00	396 50
Miami	122	953 00	381 00	121	324 00	284 00
Monroe	17	136 00	76 00	25	188 00	119 00
Montgomery	130	948 00	617 00	198	544 00	536 00
Morgan	104	359 00	127 00	57	135 00	84 00
Morrow	50	288 00	161 00	60	249 00	128 00
Muskingum	59	860 00	271 00	197	245 00	230 00
Noble	40	328 50	111 00	3	77 00	10 00
Paulding	21	535 00	134 25	40	171 00	74 25

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Cattle—All breeds and classes.			Sheep—All breeds and classes.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Perry..........	12	$221 50	$31 50	23	$64 50	$57 50
Pike...........	......	....	....	10	92 00	26 00
Portage........	53	480 00	187 00	75	252 00	210 00
Preble	103	1,020 00	373 50	191	612 00	507 60
Putnam........	49	600 00	179 00	127	400 00	308 00
Richland.......	23	296 00	87 00	25	148 00	66 00
Sandusky......	102	901 00	449 00	151	387 00	287 00
Scioto.........	27	650 00	80 25	39	510 00	62 25
Seneca.........	78	410 00	259 50	97	174 00	126 00
Shelby.........	25	414 00	115 00	29	240 00	54 00
Stark..........	51	630 00	206 00	79	344 00	265 00
Summit........	49	691 00	289 50	134	382 50	341 50
Trumbull......	57	330 00	144 00	76	129 00	126 00
Tuscarawas.....	9	160 00	44 00	23	80 00	79 90
Union.........	33	257 00	175 00	48	167 00	90 00
Van Wert......	146	1,820 00	652 00	222	798 00	665 00
Warren........	49	463 00	184 00	24	111 00	51 00
Washington....	82	940 00	246 25	18	115 00	108 75
Wayne.........	36	338 00	110 00	57	248 00	89 00
Williams	64	384 00	192 50	79	171 00	86 50
Wood..........	139	815 00	405 00	240	535 00	427 00
Wyandot.......	11	226 00	47 00	46	105 00	105 00

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Swine—All breeds and classes.			Poultry.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	16	$79 00	$54 00	232	$121 50	$98 75
Allen	105	298 00	162 00	867	180 00	162 75
Ashtabula	43	128 00	112 00	160	114 50	87 50
Athens	34	67 00	42 50	......	....	....
Auglaize	79	290 00	118 00	370	155 00	110 50
Belmont	35	152 00	107 00	135	326 50	65 25
Brown	99	275 00	178 50	292	126 00	84 50
Butler	139	345 00	310 50	625	291 50	239 85
Carroll	61	202 00	144 00	12	85 80	3 60
Champaign	110	260 00	204 00	477	177 00	149 50
Clark	92	235 00	192 00	808	446 80	334 95
Clermont	22	160 00	67 00	255	76 75	61 75
Clinton	32	170 00	69 50	124	77 45	60 75
Columbiana	36	160 00	93 00	17	60 00	12 50
Coshocton	122	474 00	393 00	988	588 00	483 50
Crawford	131	350 00	236 00	306	101 75	56 25
E. Cuyahoga	72	262 50	163 75	304	277 10	220 30
W. Cuyahoga	63	261 00	141 00	518	....	189 50
Darke	161	446 00	401 40	1,572	315 25	243 98
Erie	25	105 00	41 00	75	90 00	85 00
Fairfield	214	534 00	496 00	231	176 00	166 00
Fulton	167	247 50	182 50	1,635	320 00	239 65
Geauga	65	132 00	116 50	451	522 00	113 25
Greene	158	316 00	316 00	554	235 00	204 00
Guernsey	32	120 00	92 00	98	136 00	61 75
Hamilton	101	264 00	214 00	689	286 75	233 50
Hancock	94	212 00	155 00	379	322 00	284 50
Hardin	42	196 00	22 00	47	142 25	32 00
Harrison	27	....	63 00	26	....	13 50
Hocking	......	....	....	14	15 50	4 75
Jefferson	42	202 00	148 00	207	295 00	60 10
Lawrence	4	32 00	16 00	11	33 00	6 80
Licking	167	450 00	377 00	727	242 10	155 15
Logan	82	236 00	180 00	340	100 00	85 00
Lorain	......	425 00	236 50	......	600 00	573 90
Lucas	76	477 00	188 00	496	350 00	204 09
Madison	113	344 00	323 00	212	148 50	123 00
Mahoning	76	243 00	226 00	569	302 25	179 00
Marion	186	353 00	259 00	863	242 00	223 75
Medina	76	180 50	143 50	584	....	175 95
Meigs	21	100 00	54 00	110	137 00	96 50
Mercer	193	714 00	405 00	486	385 40	128 00
Miami	161	335 00	304 00	916	215 50	213 50
Monroe	20	132 00	103 00	55	175 00	41 00
Montgomery	174	540 00	457 00	532	305 00	214 25
Morgan	24	100 00	50 00	647	220 00	154 85
Morrow	85	212 00	148 00	376	215 25	101 75
Muskingum	51	208 00	120 00	804	400 00	220 50
Noble	......	23 00	....	4	111 00	2 00

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Swine—All breeds and classes.			Poultry.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Paulding	27	$265 00	$75 50	183	$294 00	$79 75
Perry	24	124 75	60 75	84	75 50	49 55
Pike	7	108 00	16 50	......	....	....
Portage	30	135 00	83 50	93	150 00	30 50
Preble	229	485 00	363 60	610	158 75	158 75
Putnam	139	400 00	313 50	362	275 00	148 20
Richland	23	229 00	72 00	131	168 25	65 25
Sandusky	132	340 00	303 00	1,051	681 50	576 50
Scioto	25	280 00	58 00	306	225 00	107 70
Seneca	83	272 00	198 90	449	327 00	159 05
Shelby	64	228 00	175 00	471	190 25	105 65
Stark	95	288 00	238 00	370	292 00	156 65
Summit	140	400 00	348 00	1,237	1,346 00	742 75
Trumbull......	49	170 00	107 00	276	118 50	61 25
Tuscarawas ...	7	80 00	41 00	240	110 00	78 00
Union	41	141 00	85 00	2,208	400 00	230 00
Van Wert	162	428 00	313 00	1,238	443 75	400 25
Warren	61	228 00	181 00	448	223 00	175 00
Washington....	56	355 00	48 00	52	182 00	14 75
Wayne	41	179 00	85 50	800	424 20	215 25
Williams	69	215 00	112 00	503	214 00	177 00
Wood	111	319 00	292 00	663	430 75	382 75
Wyandot	76	216 00	110 00	1,104	502 50	331 75

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Machinery and Agricultural Implements.			Manufactures.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	21	$16 00	$12 00	17	$16 00	$14 00
Allen	5	36 00	20 00	8	36 00	......
Ashtabula	7	28 50	4 00	......	......	......
Athens	......	......	......	......	30 50	11 00
Auglaize	72	......	......	178	......	......
Belmont	......	40 50	......	10	53 00	12 00
Brown	41	26 50	19 50	11	15 00	11 00
Butler	2	75 00	75 00	2	40 00	40 00
Carroll	2	15 00	15 00	15	26 50	18 00
Champaign	2	15 00	10 00	12	54 00	30 00
Clark	......	......	......	......	......	......
Clermont	......	......	......	6	6 00	5 00
Clinton	62	......	......	21	......	......
Columbiana	15	33 00	29 00	......	......	......
Coshocton	......	......	......	54	117 75	97 75
Crawford	......	......	......	......	......	......
E. Cuyahoga	65	94 25	46 25	65	58 25	36 25
W. Cuyahoga	20	65 50	15 00	14	......	......
Darke	......	......	......	2	8 00	7 20
Erie	42	58 00	48 25	17	53 00	18 00
Fairfield	......	......	......	......	......	......
Fulton	4	15 00	10 00	6	97 00	33 50
Geauga	......	......	......	......	......	......
Greene	......	......	......	......	......	......
Guernsey	3	9 50	3 00	2	17 50	......
Hamilton	2	60 00	60 00	......	......	......
Hancock	......	......	......	......	......	......
Hardin	......	......	......	1	10 00	5 00
Harrison	15	......	16 00	......	......	......
Hocking	......	......	......	......	......	......
Jefferson	30	75 00	47 75	45	40 00	40 00
Lawrence	......	......	......	......	......	......
Licking	......	......	......	......	......	......
Logan	44	75 50	35 00	......	......	......
Lorain	......	200 00	127 00	......	150 00	85 00
Lucas	......	......	......	......	......	......
Madison	......	......	......	......	......	......
Mahoning	19	56 50	34 50	14	56 50	22 00
Marion	15	110 00	110 00	112	60 00	60 00
Medina	2	12 00	12 00	14	62 00	41 25
Meigs	12	......	......	4	......	......
Mercer	96	120 00	29 50	......	......	......
Miami	12	50 00	50 00	......	......	......
Monroe	......	......	......	......	......	......
Montgomery	......	......	......	......	......	......
Morgan	......	......	......	33	38 00	15 75
Morrow	......	......	......	......	......	......
Muskingum	4	17 00	15 00	10	96 50	54 50
Noble	12	45 00	14 00	16	60 00	20 00
Paulding	......	......	......	7	32 00	20 00

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Machinery and Agricultural Implements.			Manufactures.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Perry					$20 00	
Pike						
Portage	11	$41 25	$15 50			
Preble	13	73 00	60 30	160		
Putnam	100			100		
Richland	8	10 00	10 00	8	$6 50	$6 50
Sandusky	50	42 50	28 75	97	248 25	138 00
Scioto		41 50				
Seneca						
Shelby				190	80 25	56 25
Stark	130			75		
Summit	3	44 00	41 00	28	89 50	30 00
Trumbull	3	30 00	25 00			
Tuscarawas				15	24 00	20 25
Union	157			1,300	271 00	200 00
Van Wert	35	73 50	73 50	46	150 00	148 00
Warren				23	51 00	29 00
Washington						
Wayne						
Williams				10	35 00	32 00
Wood						
Wyandot	7	37 00	27 00			

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Farm Products.			Fruits and Flowers.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	198	$70 00	$56 00	48	$36 50	$33 50
Allen	296	171 00	75 75	177	162 00	73 25
Ashtabula	155	122 25	70 50	127	114 30	44 65
Athens	......	23 50	19 50	......	71 75	32 00
Auglaize	642	195 00	131 50	409	181 00	146 00
Belmont	43	114 00	53 75	121	98 75	60 75
Brown	359	166 00	73 00	279	109 25	80 75
Butler	364	136 00	118 35	259	117 50	105 75
Carroll	144	63 00	45 75	247	76 00	69 50
Champaign	214	130 00	104 25	284	170 75	112 75
Clark	164	99 50	73 00	322	496 00	374 00
Clermont	189	70 30	54 55	567	241 75	163 50
Clinton	368	71 76	69 25	220	66 75	51 00
Columbiana	264	128 50	111 00	347	148 00	127 00
Coshocton	522	194 75	192 00	356	180 50	149 25
Crawford	129	132 75	60 50	161	138 75	96 75
E. Cuyahoga	211	127 50	76 00	329	78 00	70 90
W. Cuyahoga	95	101 90	47 40	255	74 10	46 15
Darke	359	241 00	206 90	408	157 00	131 30
Erie	123	74 00	70 25	182	156 00	96 50
Fairfield	182	312 00	274 00	249	286 00	220 00
Fulton	221	81 00	56 55	444	144 75	101 00
Geauga	133	170 75	71 75	441	159 00	83 35
Greene	493	240 00	227 00	130	95 00	83 00
Guernsey	450	127 00	91 00	105	62 00	24 50
Hamilton	86	104 50	80 25	65	320 25	286 50
Hancock	112	235 00	37 75	130	242 00	41 75
Hardin	82	58 50	36 00	48	72 00	65 00
Harrison	27	....	7 25	60	....	10 50
Hocking	7	9 75	7 50	35	45 75	20 00
Jefferson	64	70 00	32 00	203	100 00	100 00
Lawrence	30	55 00	14 00	90	100 00	41 40
Licking	292	199 00	150 50	172	217 25	121 00
Logan	125	120 00	60 00	410	240 00	230 00
Lorain	......	200 00	50 00	......	....	....
Lucas	94	80 00	27 25	207	80 00	66 50
Madison	200	282 75	201 50	268	140 00	105 50
Mahoning	316	212 00	131 15	405	161 95	149 95
Marion	712	205 25	196 50	306	128 00	120 25
Medina	120	....	36 20	361	132 75	99 00
Meigs	206	82 50	63 00	105	42 15	35 50
Mercer	356	175 00	94 75	350	260 00	156 20
Miami	368	207 75	193 25	569	299 50	254 50
Monroe	7	27 50	9 25	48	45 25	28 60
Montgomery	555	728 00	375 00	361	411 10	321 25
Morgan	90	49 50	23 50	98	51 25	10 25
Morrow	161	78 75	40 75	61	44 25	33 75
Muskingum	130	249 00	119 22	112	304 00	154 30
Noble	40	57 75	31 75	33	38 25	12 75
Paulding	120	89 00	31 60	132	79 00	46 00

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Farm Products.			Fruits and Flowers.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Perry	161	$106 50	$86 00	146	$191 25	$78 50
Pike	17	33 20	3 75	19	33 25	4 75
Portage	65	87 75	24 40	223	161 70	68 30
Preble	......	238 00	159 53	280	116 25	87 53
Putnam	1,170	400 00	235 00	272	125 00	52 00
Richland	261	170 00	154 00	116	65 00	55 75
Sandusky	272	88 75	70 25	214	110 50	91 00
Scioto	198	107 85	67 50	169	133 95	59 60
Seneca	98	126 00	49 35	257	146 00	140 75
Shelby	......	....	....	123	77 75	69 50
Stark	229	232 00	187 55	415	305 00	175 50
Summit	496	292 95	230 80	558	322 70	242 20
Trumbull	109	62 00	25 25	242	104 25	99 00
Tuscarawas	180	125 00	115 00	291	84 00	64 00
Union	......	....	....	173	150 00	80 00
Van Wert	941	364 00	259 45	618	160 00	128 75
Warren	261	83 25	72 50	101	107 50	51 00
Washington	56	100 00	31 45	6	100 00	48 60
Wayne	100	106 65	94 40	87	70 00	55 00
Williams	661	275 00	151 00	994	454 00	330 00
Wood	663	430 75	382 75	369	158 25	105 25
Wyandot	......	86 25	75 25	......	46 75	18 75

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Household Productions.			Fine Arts.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	307	$200 00	$197 00	90	$39 00	$37 00
Allen	200	71 00	48 25	844	669 00	366 25
Ashtabula	871	234 45	215 45	240	150 75	120 45
Athens	......	29 50	11 00	......	24 25	10 50
Auglaize	1,714	400 00	296 00	1,219	250 00	164 15
Belmont	472	277 25	109 00	61	20 25	10 00
Brown	521	114 50	104 00	25	14 50	13 50
Butler	1,447	294 00	276 85	294	133 00	132 50
Carroll	465	161 00	126 50	34	18 00	18 00
Champaign	643	270 25	195 75	952	359 00	239 00
Clark	644	404 30	271 70	326	337 20	299 35
Clermont	635	221 25	177 75	211	87 00	83 50
Clinton	485	104 75	98 60	170	27 00	27 00
Columbiana	345	119 50	101 00	21	23 00	17 25
Coshocton	1,024	270 05	262 60	316	145 00	139 50
Crawford	1,286	541 25	414 75	445	168 00	148 00
E. Cuyahoga	699	147 70	116 70	149	97 50	65 35
W. Cuyahoga	772	160 20	128 95	44	33 60	16 80
Darke	1,050	328 00	283 90	976	507 50	338 60
Erie	1,090	273 00	143 00	166	220 00	114 55
Fairfield	472	254 00	239 00	314	288 00	268 00
Fulton	427	421 00	216 00	363	445 00	210 00
Geauga	1,017	193 25	196 00	144	122 75	82 50
Greene	788	360 00	318 00	138	175 00	145 50
Guernsey	775	85 50	182 00	278	27 00	95 00
Hamilton	711	279 75	274 25	344	131 75	129 50
Hancock	161	300 00	69 50	213	600 00	462 71
Hardin	397	309 90	231 00	356	116 65	97 00
Harrison	309	....	46 70	65	....	16 00
Hocking	21	14 00	6 50	31	23 00	15 00
Jefferson	262	300 00	250 00	120	65 00	65 00
Lawrence	172	164 00	71 40	15	23 00	12 20
Licking	489	434 50	327 00	479	547 50	216 50
Logan	1,700	450 00	340 57	570	475 00	425 00
Lorain	......	....	....	......	300 00	227 85
Lucas	223	120 00	73 15	29	75 00	11 25
Madison	681	381 75	299 50	85	103 75	63 50
Mahoning	449	160 65	77 85	148	117 00	90 00
Marion	1,006	269 45	249 95	566	365 75	272 25
Medina	839	240 40	174 10	247	149 20	131 30
Meigs	212	111 50	97 25	8	25 25	10 50
Mercer	747	500 00	150 08	278	175 00	98 50
Miami	1,287	556 00	486 00	313	281 00	274 00
Monroe	149	75 00	30 25	......	....	....
Montgomery	1,801	465 25	420 25	530	183 00	168 50
Morgan	111	36 50	17 50	38	24 00	16 25
Morrow	515	103 25	76 50	112	96 50	58 25
Muskingum	197	135 50	91 40	169	354 00	197 50
Noble	157	195 00	55 00	9	84 00	5 25
Paulding	655	225 00	144 87	54	97 00	29 01

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Household Productions.			Fine Arts.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Perry	284	$167 50	$99 25	6	$30 00	$4 50
Pike	91	102 50	39 30	6	1 50	1 50
Portage	224	149 85	72 75	63	60 00	39 50
Preble	463	301 00	238 05	1,240	300 75	246 15
Putnam	809	300 00	207 00	3,200	900 00	834 33
Richland	365	146 65	111 70	103	57 20	24 25
Sandusky	269	50 75	45 00	609	441 25	252 25
Scioto	313	108 00	66 75	9	28 50	3 75
Seneca	898	260 00	218 90	121	120 00	71 80
Shelby	970	297 00	239 45	472	350 00	273 48
Stark	667	260 00	207 55	166	270 00	228 00
Summit	809	304 10	205 80	355	172 50	132 50
Trumbull	560	116 75	101 50	143	67 50	56 25
Tuscarawas	160	73 00	71 00	135	41 00	40 75
Union	700	200 00	175 00	300	175 00	125 00
Van Wert	1,270	636 25	296 25	600	719 25	508 43
Warren	980	210 75	187 15	208	42 50	41 75
Washington	46	225 00	79 75	225	175 00	98 10
Wayne	814	270 00	263 30	299	88 00	80 00
Williams	......	....	....	600	450 00	299 50
Wood	1,262	285 75	263 25	600	206 80	195 80
Wyandot	......	183 25	106 75	......	20 25	15 75

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Merchandise.		
	Number of entries.	Amount offered.	Amount awarded.
Adams	10	$16 00	$12 00
Allen	134	392 00	158 00
Ashtabula			
Athens		20 00	8 50
Auglaize			
Belmont			
Brown			
Butler			
Carroll	179	41 00	63 00
Champaign			
Clark			
Clermont			
Clinton	12	49 00	31 25
Columbiana			
Coshocton	7	109 00	48 00
Crawford	35	473 50	445 50
E. Cuyahoga	66	61 25	30 50
W. Cuyahoga	66	86 50	60 70
Darke	50	649 00	443 10
Erie			
Fairfield			
Fulton	171	190 00	142 00
Geauga			
Greene			
Guernsey	175	66 00	25 00
Hamilton			
Hancock	18	110 00	37 00
Hardin			
Harrison	12		
Hocking			
Jefferson	60	65 00	35 00
Lawrence			
Licking			
Logan	60	105 00	75 00
Lorain		95 00	38 25
Lucas			
Madison			
Mahoning	12	12 50	12 50
Marion	108	133 00	87 75
Medina			
Meigs	48	52 50	22 50
Mercer			
Miami			
Monroe			
Montgomery			
Morgan	3	17 75	7 00
Morrow	400	366 00	298 50
Muskingum	36	100 00	37 00
Noble	2	10 50	1 50
Paulding	12	56 00	34 25

TABLE II—ENTRIES AND AWARDS—Concluded.

Counties.	Merchandise.		
	Number of entries.	Amount offered.	Amount awarded.
Perry	......	....	....
Pike	......	....	....
Portage	4	$60 00	$35 00
Preble	......	24 00	18 00
Putnam	50	....	....
Richland	8	44 00	12 00
Sandusky	......	....	....
Scioto	......	....	....
Seneca	200	140 00	98 31
Shelby	......	....	....
Stark	37	127 00	41 25
Summit	......	9 00	....
Trumbull	3	90 00	90 00
Tuscarawas	......	....	....
Union	15	100 00	80 00
Van Wert	......	....	....
Warren	......	....	....
Washington	......	....	....
Wayne	......	....	....
Williams	......	....	....
Wood	44	45 00	28 00
Wyandot	......	152 00	81 00

TABLE III—PROPERTY, RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1907.

Counties.	Number of acres in Fair Grounds.	Grounds owned by the society or leased.	If owned, cash value of real estate and improvements thereon.	Amount of indebtedness, if any, on all accounts.	Number of members.
Adams	16½	Owned	$8,000 00	$2,000 00	130
Allen	30	Leased	......	......	803
Ashtabula	24	Owned	7,500 00	1,900 00	154
Athens	30	Owned	22,000 00	1,500 00	115
Auglaize	40	Owned	20,000 00	2,618 97	690
Belmont	17½	Owned	......	164 62	84
Brown	......	Owned	......	......	10
Butler	57	Owned	57,000 00	14,000 00	10
Carroll	28	Owned	......	......	14
Champaign	50	Owned	15,000 00	......	82
Clark	47	Owned	......	1,500 00	115
Clermont	24	Owned	10,000 00	......	914
Clinton	30	Leased	......	800 00	12
Columbiana	29	Owned	30,000 00	4,826 43	437
Coshocton	38	Owned	60,000 00	8,050 00	296
Crawford	30	Owned	16,000 00	3,600 00	240
E. Cuyahoga	61¾	Owned	......	......	22
W. Cuyahoga	23	Owned	20,000 00	250 00	181
Darke	44	Owned	30,000 00	......	10
Erie	45	Leased	......	......	330
Fairfield	76	Owned	70,000 00	18,000 00	261
Fulton	40	Owned	10,000 00	......	168
Geauga	22	Owned	......	......	824
Greene	40	Leased	......	......	14
Guernsey	28	Owned	9,000 00	......	16
Hamilton	47	Owned	......	......	670

Hancock	70	Owned	28,000 00	1,590 00	350
Hardin	45½	Owned	9,000 00	2,100 00	30
Harrison	35	Leased			
Hocking	26	Owned			114
Jefferson	13¾	Leased			502
Lawrence	20	Owned	6,665 77	2,000 00	218
Licking	70	Owned	75,000 00	5,900 71	12
Logan	38	Owned	25,000 00	2,000 00	1,327
Lorain	32	Owned	55,000 00	2,200 00	164
Lucas	33½	Owned	75,000 00	3,500 00	15
Madison	46	Owned	18,500 00	175 00	1,320
Mahoning	45	Owned	10,000 00	40 43	183
Marion	47	Owned	32,000 00	550 00	484
Medina	27¾	Owned	8,000 00		660
Meigs	70	Owned	20,000 00	10,000 00	60
Mercer	47	Owned	40,000 00	1,500 00	15
Miami	52	Owned	35,000 00		24
Monroe	35	Owned	20,000 00	8,000 00	145
Montgomery	42	Owned	175,000 00		22
Morgan	24½	Owned	3,200 00	2,750 00	92
Morrow	35	Owned	12,000 00	1,680 00	274
Muskingum	44	Owned	70,000 00	17,000 00	232
Noble	10¾	Owned	2,000 00		24
Paulding	33	Owned	11,000 00	2,500 00	376
Perry	20	Leased			50
Pike	30	Leased		2,377 87	45
Portage	22½	Owned	10,000 00	10,200 00	542
Preble	42	Owned	20,000 00	1,500 00	13
Putnam	40	Owned	33,000 00	3,200 00	294
Richland	30	Owned	25,000 00	470 00	158
Sandusky	46	Owned	20,000 00	4,000 00	2,000
Scioto	30	Leased		2,650 00	38
Seneca	49	Leased		606 88	310
Shelby	43	Owned	30,000 00		
Stark	53	Owned	45,000 00	15,000 00	265
Summit	47	Owned	52,000 00	15,000 00	211
Trumbull	34	Owned	25,000 00	2,500 00	305
Tuscarawas	29	Owned	40,000 00	11,000 00	140
Union	49½	Owned	20,000 00	5,800 00	14
Van Wert	54¼	Owned	29,750 00	7,450 00	228

TABLE III—PROPERTY, RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1907—Continued.

Counties.	Number of acres in Fair Grounds.	Grounds owned by the society or leased.	If owned, cash value of real estate and improvements thereon.	Amount of indebtedness, if any, on all accounts.	Number of members.
Warren	33	Leased	$12,000 00	....	308
Washington	32	Owned	20,000 00	$13,600 00	297
Wayne	40	Owned	9,500 00	2,800 00	130
Williams	43	Owned	11,500 00	2,000 00	367
Wood	61½	Owned	25,000 00	1,582 29	210
Wyandot	25	Owned	....	922 50	181

TABLE III—PROPERTY, RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1907—Continued.

Counties.	Cash in treasury at beginning of fiscal year.	Amount received from gate admissions.	Amount received from entry fees.
Adams	$5 19	$1,378 20	$96 70
Allen	....	5,548 75	1,164 00
Ashtabula	....	3,773 15	1,238 30
Athens	522 02	2,957 40	831 96
Auglaize	....	4,225 15	669 65
Belmont	47 70	1,554 40	436 84
Brown	224 76	2,647 75	8 20
Butler	6,337 31	8,230 50	1,372 50
Carroll	29 00	2,527 00	589 75
Champaign	555 86	3,443 67	1,938 20
Clark	....	4,569 55	1,968 67
Clermont	34 15	2,488 50	351 75
Clinton	105 09	2,655 11	161 82
Columbiana	1,692 23	2,796 50	382 00
Coshocton	....	7,464 75	1,023 00
Crawford	189 98	4,466 25	780 80
E. Cuyahoga	1,062 49	2,538 15	327 95
W. Cuyahoga	52 06	1,956 50	981 50
Darke	738 25	9,819 75	972 15
Erie	436 50	2,409 65	813 45
Fairfield	955 95	8,586 25	1,300 00
Fulton	619 09	3,279 50	590 25
Geauga	1 09	3,035 50	271 65
Greene	185 00	3,984 00	2,795 00
Guernsey	....	2,368 66	415 00

TABLE III—PROPERTY, RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1907—Continued.

Counties.	Cash in treasury at beginning of fiscal year.	Amount received from gate admissions.	Amount received from entry fees.
Hamilton	$56 03	$6,704 25	$1,115 00
Hancock	176 02	4,319 66	622 05
Hardin	27 19	2,591 10	1,086 25
Harrison	172 71	1,850 80	188 75
Hocking	383 81	1,417 60	714 47
Jefferson	880 24	2,050 85	675 75
Lawrence	69 17	1,504 14	355 80
Licking		4,761 50	1,402 18
Logan	111 77	4,051 44	1,287 50
Lorain	25 18	4,971 95	178 79
Lucas	1,418 44	1,525 40	378 00
Madison	537 64	4,845 65	2,013 61
Mahoning	1,658 26	5,150 25	610 45
Marion	1,050 05	5,019 41	1,967 40
Medina	501 97	2,804 25	415 36
Meigs	131 91	2,332 25	51 20
Mercer	2,736 26	4,520 30	1,311 50
Miami	3,223 15	5,748 20	1,677 30
Monroe	44 30	2,183 40	908 00
Montgomery	574 01	8,945 91	2,940 50
Morgan	16 54	1,007 00	70 00
Morrow		2,789 00	947 60
Muskingum	57	5,222 30	830 75
Noble	462 69	682 17	317 50
Paulding	94 04	2,838 05	746 50

Perry	263 69	1,112 70	298 94
Pike	2,000 00	1,603 80	299 30
Portage	48 17	1,513 10	385 70
Preble	803 00	5,467 25	855 00
Putnam		4,892 50	763 00
Richland	38 89	2,630 00	861 20
Sandusky	586 66	4,018 75	545 10
Scioto	143 77	975 50	149 80
Seneca	112 97	3,494 09	255 00
Shelby		3,924 50	1,145 00
Stark	661 64	3,221 89	862 60
Summit	3,421 31	7,952 45	1,655 00
Trumbull	880 78	3,471 15	475 00
Tuscarawas	8 46	3,940 75	666 65
Union	22 19	3,487 25	
Van Wert	335 24	6,533 15	1,515 75
Warren	49 62	3,215 28	1,005 40
Washington	701 47	5,368 65	460 00
Wayne	25 78	2,397 85	981 70
Williams	226 00	5,146 00	252 50
Wood	2,582 13	6,248 25	249 00
Wyandot		1,629 50	265 75

TABLE III—PROPERTY, RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1907—Continued.

Counties.	Amount received from booth rents and privilege permits.	Amount received from other sources.	Amount paid in premiums.	Amount paid for real estate, buildings and permanent improvements.	Amount paid for current expenses other than premiums.	Amount paid on old indebtedness.	Balance cash in treasury.	Amount of unpaid bills and accounts, if any, for current year.
Adams	$300 25	$230 50	$1,367 75	$375 65	$708 93			$441 49
Allen	1,112 00	1,882 07	4,438 25	651 04	3,467 86	$1,102 03	$47 64	
Ashtabula	751 14	2,700 00	2,983 55	1,600 00	2,527 55	601 38	102 94	31 45
Athens	1,263 40	1,914 60	1,795 75	2,740 43	1,717 76	600 07	635 37	
Auglaize	2,288 62	1,221 84	4,565 15	810 14	2,294 94	735 03		
Belmont	153 50	900 00	1,800 25		856 81	600 00		
Brown	409 00	797 27	1,448 00	354 04	1,419 58		865 36	
Butler	3,559 95	4,286 84	5,943 60		6,563 23	1,000 00	10,280 27	
Carroll	685 55	1,041 16	2,514 23		2,032 12		326 11	
Champaign	1,304 00	598 45	5,001 66	838 03	1,800 65		199 84	
Clark	1,894 50	2,507 03	6,096 50	487 00	3,115 27	660 27		137 50
Clermont	961 25	772 20	2,323 05	753 71	1,482 57		48 52	
Clinton	676 50	45 00	2,053 95		1,517 93		71 64	62 24
Columbiana	574 00	3,087 24	2,111 75	4,292 33	2,254 32			
Coshocton	2,413 80	614 60	5,714 10	6,667 81	3,618 87			
Crawford	904 50	1,815 60	4,247 25		3,108 83	770 47	30 58	
E. Cuyahoga	652 40	1,472 10	2,498 75	918 52	1,323 80		1,312 02	
W. Cuyahoga	684 50	2,698 12	2,649 75	1,809 35	1,886 37		27 21	
Darke	3,320 80	1,303 90	6,499 23	498 45	6,840 53		2,316 64	
Erie	801 00	1,363 85	2,443 55	391 23	2,920 20		69 47	
Fairfield	2,707 00	1,507 95	6,573 00	3,500 00	2,000 00		2,984 15	
Fulton	841 50	1,107 14	1,859 36	1,300 00	2,645 30		532 92	15 50
Geauga	650 65	738 99	2,780 70		1,617 75		299 43	
Greene	1,104 00	801 85	5,935 50	916 00	1,878 50		139 85	
Guernsey	339 00	688 50	2,130 70	503 16	1,161 73	57 00		41 43

Hamilton	2,271 00	2,244 15	4,646 50	2,957 78	4,074 86	...	711 29	...
Hancock	1,207 00	247 00	3,397 21	637 94	2,534 52	...	2 06	...
Hardin	893 50	762 32	3,371 25	916 01	555 81	500 00	17 29	...
Harrison	259 60	606 83	1,777 45	500 00	649 18	...	152 06	416 00
Hocking	400 00	212 27	1,890 75	505 40	722 66	...	9 34	555 28
Jefferson	570 00	1,500 00	3,685 85	652 80	1,234 39	...	103 80	...
Lawrence	298 35	254 57	1,142 08	241 15	721 59	369 62	7 59	...
Licking	1,915 50	1,302 96	5,378 15	848 96	1,138 17	1,956 78	60 08	260 71
Logan	1,530 60	2,331 29	5,248 02	1,042 42	2,283 68	626 33	112 15	...
Lorain	749 00	3,413 40	1,947 50	...	4,551 14	2,800 00	39 68	...
Lucas	258 41	2,828 53	1,700 30	2,617 21	1,417 02	567 89	107 36	...
Madison	1,087 50	420 47	5,792 50	1,000 00	1,767 01	...	345 36	175 00
Mahoning	675 75	3,398 30	3,439 25	3,938 93	4,074 40	...	40 43	...
Marion	1,499 30	1,697 12	6,134 45	435 33	2,331 63	...	134 70	550 00
Medina	410 00	384 00	1,518 30	723 07	2,457 28	...	16 93	...
Meigs	331 25	572 40	1,920 25	...	826 93	1,096 83	...	425 00
Mercer	1,428 30	1,717 13	5,447 14	927 16	3,064 76	1,700 00	474 43	...
Miami	2,160 00	2,201 20	6,424 25	500 00	3,155 48	...	4,930 12	...
Monroe	710 75	1,054 96	2,684 10	176 50	1,686 90	461 00	...	...
Montgomery	2,266 00	1,137 50	8,978 75	409 19	5,414 39	...	1,061 59	...
Morgan	242 70	79 00	1,109 60	108 79	388 85	137 50	...	95 69
Morrow	664 70	837 58	2,931 50	2,246 99	...	...	60 39	...
Muskingum	1,191 32	2,370 83	4,105 01	185 08	4,108 97	1,170 86	45 85	98 90
Noble	146 25	34 00	798 00	106 25	641 16	...	97 20	...
Paulding	729 50	1,367 69	2,744 38	734 18	1,452 28	786 58	58 36	305 63
Perry	359 85	636 82	850 00	313 56	761 69	526 75	220 00	657 55
Pike	305 50	81 00	1,129 55	4,580 20	957 72	...	...	2,377 87
Portage	335 75	294 49	1,300 11	114 25	858 40	243 56	60 89	245 36
Preble	1,939 50	2,608 69	5,668 56	873 98	5,840 21	...	...	769 31
Putnam	1,988 92	5,047 57	5,379 03	320 91	5,797 25	1,154 24	40 56	...
Richland	338 50	1,370 00	2,627 95	455 22	2,056 02	99 40	...	4,700 00
Sandusky	611 00	171 49	3,451 43	355 67	4,287 50	...	838 40	...
Scioto	320 17	1,597 92	2,085 80	333 21	210 18	500 00	57 97	...
Seneca	677 50	1,593 67	2,945 66	600 00	2,447 00	244 70	120 51	100 00
Shelby	1,091 60	988 30	4,049 80	1,265 99	1,992 43	...	...	...
Stark	1,220 00	1,787 87	3,734 00	1,495 01	3,374 22	152 45	...	125 00
Summit	2,032 55	2,269 25	5,954 55	2,781 94	6,162 82	...	2,431 05	...
Trumbull	721 50	263 71	2,472 25	1,031 32	1,431 57	1,000 00	...	123 00
Tuscarawas	746 50	1,184 30	1,897 00	1,169 30	1,030 20	2,040 00	410 16	...
Union	992 50	5,697 24	1,568 34	4,000 00	...	2,000 00	...	...

TABLE III—PROPERTY, RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1907—Concluded.

Counties.	Amount received from booth rents and privilege permits.	Amount received from other sources.	Amount paid in premiums.	Amount paid for real estate, buildings and permanent improvements.	Amount paid for current expenses other than premiums.	Amount paid on old indebtedness.	Balance cash in treasury.	Amount of unpaid bills and accounts, if any, for current year.
Van Wert......	$2,180 65	$4,771 44	$7,150 13	$2,223 23	$4,962 29	$950 00	$50 58	....
Warren........	705 00	511 68	3,190 80	....	2,453 59	....	42 59	....
Washington.....	625 00	1,970 00	2,486 15	1,927 89	4,003 74	527 67	184 67	....
Wayne........	286 50	2,982 36	2,964 95	1,550 00	1,544 94	614 30	....	$19 94
Williams.......	789 00	1,769 89	3,396 00	1,245 55	2,682 95	240 00	618 89	23 15
Wood..........	3,399 68	7,169 90	3,402 39	5,092 62	11,936 24	....	....	200 00
Wyandot......	365 00	....	2,523 50	....	659 25	....	....	922 50

BULLETIN OF AWARDS

Ohio State Fair and Industrial Exposition

Columbus, Sept. 2, 3, 4, 5 and 6

1907

We present herewith a Bulletin of Awards of the Fifty-seventh Annual State Fair and Industrial Exposition, containing a complete list of awards in the live stock and other competitive departments, also a list of exhibitors and exhibits in the non-competitive departments.

Ohio for years has occupied an enviable position as a leader of State agricultural expositions, and with the passing of the last exhibition another jewel was added to her crown, as from both an educational and financial viewpoint it far surpassed any of its predecessors. Weather conditions during the week of the Exposition were ideal and the grounds were daily thronged with vast crowds eagerly seeking knowledge to be gained by carefully examining and studying the colossal displays of Ohio's fruitfulness in the arts and industries, and to enjoy the pleasure of meeting and greeting old friends amid such pleasant environments. The park ground, famed for its beauty, shone forth proudly in all its scenic splendor, while its architectural beauty had been further enhanced by the erection during the past year of a handsome concrete amphitheatre and an inviting rest room. The exhibits proper were so numerous as to tax to the utmost capacity the commodious exhibition buildings and acres of platted ground in the open, affording unlimited opportunity for research and study along the lines depicted by the various exhibits.

The total receipts far exceeded those of any previous exhibition, the unusual increase being due principally to the fact that the State

Board of Agriculture were the prime promoters of a joyous Buckeye Home Coming, an event which brought together in happy reunion thousands of native-born Buckeyes who had strayed from their native heath. The Home Coming was a pronounced success, far exceeding our fondest anticipations, as practically every State in the Union was represented in the reunion, and even from foreign shores many returned to participate in the joyful festivities. 'Twas a happy thought indeed that the fair grounds was chosen as the chief trysting place for the returning Ohioans, as on every side could they witness the marvelous advancements that had been made during their absence, while the stupendousness of the Exposition was evidence of the industry of our people and the prosperity of our State.

We take this opportunity of extending our sincere thanks to the press of the State for its liberality in devoting its columns in giving publicity to the Exposition and Home Coming; and to the citizens of Columbus, who, through their progressive Board of Trade, co-operated in every manner possible in making these two events such a grand success.

Respectfully submitted,
T. L. CALVERT,
Secretary.

J. W. FLEMING,
Assistant Secretary.

LIST OF AWARDS

Ohio State Fair, 1907

FIRST DEPARTMENT—HORSES.

C. H. GANSON, Member in Charge.

ROADSTERS—STANDARD BRED.

Name of Owner.	Postoffice.	Awards.	Amount
H. J. Jameson	Delaware, O.	Best Stallion 4 years or Over—Hesperus	$25 00
C. G. Smith	Reynoldsburg, O.	2d Best... Sunland Clay	10 00
Seymour Smith	Pataskala, O.	3d Best... Sunland Clay, Jr.	5 00
Dr. C. E. Leist	Columbus, O.	Best Stallion 3 Years and Under 4—Sir Edwin Algar	25 00
Heskett & Brimbee	Fulton, O.	2d Best... Perfection King	10 00
Seymour Smith	Pataskala, O.	Best Stallion 2 Years and Under 3—Hunkey-Punkey	18 00
Heskett & Brimbee	Fulton, O.	2d Best... Taft	6 00
Dr. C. E. Leist	Columbus, O.	Best Stallion 1 Year and Under 2—Shepard King	18 00
Seymour Smith	Pataskala, O.	Best Stallion Colt Under 1 Year—Osborn, Jr.	12 00
Dr. C. E. Leist	Columbus, O.	2d Best... Surgeon McCarson	5 00
Heskett & Brimbee	Fulton, O.	3d Best	3 00
Heskett & Brimbee	Fulton, O.	Best Mare 4 Years or Over	25 00
Heskett & Brimbee	Fulton, O.	2d Best... Miss Beana	10 00
Heskett & Brimbee	Fulton, O.	Best Mare 3 Years and Under 4	18 00
C. G. Smith	Reynoldsburg, O.	2d Best... Orphan Star	6 00
G. T. Evans	Mt. Orab, O.	Best Mare 2 Years and Under 3—Maude Mate	18 00
Dr. C. E. Leist	Columbus, O.	2d Best... Dolly Bliss	6 00
Heskett & Brimbee	Fulton, O.	3d Best	3 00
Heskett & Brimbee	Fulton, O.	Best Filly 1 Year and Under 2	12 00
Heskett & Brimbee	Fulton, O.	2d Best	5 00
C. G. Smith	Reynoldsburg, O.	Best Get of Sire—Sunland Clay	25 00
Heskett & Brimbee	Fulton, O.	2d Best	10 00
Dr. C. E. Leist	Columbus, O.	Best Produce of Mare—A Junette and Produce	20 00
Heskett & Brimbee	Fulton, O.	2d Best	8 00
Seymour Smith	Pataskala, O.	3d Best	4 00

ROADSTERS—NON-STANDARD.

Name of Owner.	Postoffice.	Awards.	Amount
J. L. Grove	Newark, O.	Best Stallion 4 Years or Over—Illinois Prince	$25 00
Leonard & Co.	London, O.	2d Best... Clay Burns	10 00
B. F. Parsell	Reynoldsburg, O.	3d Best... Red Onward	5 00
B. Edwards	Galena, O.	Best Stallion 3 Years and Under 4—Sunday Clay	25 00
S. E. Helmick	Commercial Pt., O.	2d Best... J. Wilks	10 00
C. G. Smith	Reynoldsburg, O.	Best Stallion 2 Years and Under 3—Dark Clay	18 00
B. F. Parsell	Reynoldsburg, O.	2d Best... Bell Boy	6 00
Burt Sargeant	Columbus, O.	3d Best... Blinky	3 00
Cepter Gregg	Sunbury, O.	Best Stallion 1 Year and Under 2—Hesper-Onward	18 00
C. G. Smith	Reynoldsburg, O.	2d Best... Charlie C.	6 00
J. B. Short	Columbus, O.	3d Best... Buster Brown	3 00
B. F. Parsell	Reynoldsburg, O.	Best Stallion Colt Under 1 Year—Major	12 00
C. G. Smith	Reynoldsburg, O.	2d Best... Clay S.	5 00
S. H Turner	Columbus, O.	Best Mare 4 Years or Over—Hester Wilks	25 00
Anna Byerly	Columbus, O.	2d Best... Elizabeth	10 00
Heskett & Brimbee	Fulton, O.	3d Best	5 00
B. F. Parsell	Reynoldsburg, O.	Best Mare 3 Years and Under 4—Red Bird	18 00
Anna Byerly	Columbus, O	2d Best... Goldie	6 00
Heskett & Brimbee	Fulton, O.	3d Best	3 00
Anna Byerly	Columbus, O	Best Mare 2 Years and Under 3—Ruth Maid	18 00
J. B. Vanse	Lockbourne, O	2d Best... May	6 00
C. G. Smith	Reynoldsburg, O.	3d Best... Tony S	3 00

ROADSTERS—NON-STANDARD—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount
B. F. Parsell	Reynoldsburg, O.	Best Filly 1 Year and Under 2—Bell C	$12 00
B. F. Parsell	Reynoldsburg, O.	2d Best.......Betsy	5 00
J. B. Short	Columbus, O	3d Best.......Hazel	3 00
C. B. Smith	Camp Chase, O	Best Filly Colt Under 1 Year—Daisy	10 00
C. G. Smith	Reynoldsburg, O.	2d Best.......Claty	4 00
Anna Byerly	Columbus, O	3d Best	2 00
B. F. Parsell	Reynoldsburg, O.	Best Get of Sire	25 00
J. B. Short	Columbus, O.	2d Best	10 00
A. W. Dennis	Columbus, O.	3d Best	5 00
B. F. Parsell	Reynoldsburg, O.	Best Produce of Mare	20 00
Anna Byerly	Columbus, O.	2d Best	8 00
C. G. Smith	Reynoldsburg, O.	3d Best	4 00

GENTLEMEN'S DRIVERS—STANDARD AND NON-STANDARD.

Name of Owner.	Postoffice.	Awards.	Amount.
Anna Byerly	Columbus, O.	Best Mare 4 Years or Over—Elizabeth	$20 00
S. H. Turner	Columbus, O.	2d Best.......Hester Wilks	10 00
Mitchell Stock Farm	Columbus, O.	Best Gelding 4 Years or Over	20 00
Anna Byerly	Columbus, O.	2d Best.......Colonel	10 00
Mitchell Stock Farm	Columbus, O.	Best Pair Geldings or Mares	20 00
W. S. Robison	Mt. Sterling. O.	2d Best.......Barney and Billy	10 00
C. G. Smith	Reynoldsburg, O.	Best Stallion Any Age—Sunland Clay	25 00
B. F. Parsell	Reynoldsburg, O.	Best Mare Any Age—Red Bird	25 00
Mitchell Stock Farm	Columbus, O.	Best Gelding Any Age	25 00

FRENCH COACH.

Name of Owner.	Postoffice.	Awards.	Amount.
McLaughlin Bros.	Columbus, O.	Best Stallion 4 Years or Over—Decorateur	$25 00
McLaughlin Bros	Columbus, O.	2d Best.......Danseur	10 00
McLaughlin Bros	Columbus, O.	3d Best.......Duc	4 00
McLaughlin Bros	Columbus, O.	Best Stallion 3 Years and Under 4—Elerun	25 00
McLaughlin Bros	Columbus, O.	2d Best.......Esprit-de-Vin	10 00
McLaughlin Bros	Columbus, O.	3d Best.......Encolvey	4 00
McLaughlin Bros	Columbus, O.	Best Get of Sire	25 00
McLaughlin Bros	Columbus, O.	Best Produce of Mare	20 00

GERMAN COACH.

Name of Owner.	Postoffice.	Awards..	Amount.
J. Crouch & Son	Lafayette, Ind	Best Stallion 4 Years or Over—Minno	$25 00
J. Crouch & Son	Lafayette, Ind	2d Best.......Vasks	10 00
Hartman Stock Farm	Columbus, O.	3d Best.......Erbherr	4 00
J. Crouch & Son	Lafayette, Ind	Best Stallion 3 Years and Under 4—Betel	25 00
Hartman Stock Farm	Columbus, O.	2d Best.......Gockel	10 00
J. Crouch & Son	Lafayette, Ind	3d Best.......Widekind	4 00
Hartman Stock Farm	Columbus, O.	Best Stallion 2 Years and Under 3—Baccarlus	18 00
J. Crouch & Son	Lafayette, Ind	2d Best.......Eulenspiegel	5 00
Hartman Stock Farm	Columbus, O.	3d Best	2 00
H. C. Geyer	Galloway, O.	Best Stallion Colt Under 1 Year	12 00
J. Crouch & Son	Lafayette, Ind	Best Mare 4 Years or Over—Agnes	25 00
J. Crouch & Son	Lafayette, Ind	2d Best.......Anmisetta	10 00
Hartman Stock Farm	Columbus, O.	3d Best.......Antine	4 00
Hartman Stock Farm	Columbus, O.	Best Mare 3 Years and Under 4—Aga	18 00
J. Crouch & Son	Lafayette, Ind	2d Best.......Sonora	5 00
J. Crouch & Son	Lafayette, Ind	3d Best.......Louisa	2 00
J. Crouch & Son	Lafayette, Ind	Best Mare 2 Years and Under 3—Edeltraut	18 00
H. C. Geyer	Galloway, O	Best Filly 1 Year and Under 2	12 00
Hartman Stock Farm	Columbus, O.	Best Get of Sire	25 00
Geo. W. Crawford	Newark, O.	2d Best	10 00
Hartman Stock Farm	Columbus, O.	Best Produce of Mare	20 00
Geo. W. Crawford	Newark, O.	2d Best	8 00

FRENCH DRAFT AND BELGIAN.

Name of Owner.	Postoffice.	Awards.	Amount.
J. Crouch & Son	Lafayette, Ind	Best Stallion 4 Years or Over—Perce	$25 00
Geo. W. Crawford	Newark, O.	2d Best ... Lambert	10 00
J. Crouch & Son	Lafayette, Ind	3d Best ... Mon Sanhart	5 00
J. Crouch & Son	Lafayette, Ind	Best Stallion 3 Years and Under 4—Amera de Novihart.	25 00
J. Crouch & Son	Lafayette, Ind	2d Best ... Nelson	10 00
J. Crouch & Son	Lafayette, Ind	3d Best ... Herman	5 00
J. Crouch & Son	Lafayette, Ind	Best Stallion 2 Years and Under 3—Herculede Leffinghe.	18 00
J. Crouch & Son	Lafayette, Ind	2d Best ... Cecerond' Ophas	6 00
Geo. W. Crawford	Newark, O.	3d Best ... Montou Rebug	3 00
Geo. W. Crawford	Newark, O.	Best Stallion 1 Year and Under 2—Sargent de' Pierpont..	18 00
Geo. W. Crawford	Newark, O.	2d Best ... Grandbein	6 00
H. L. Domigan	Sunbury, O.	Best Stallion Colt Under 1 Year..Russel	12 00
J. Crouch & Son	Lafayette, Ind	Best Mare 4 Years or Over—Cybelle de Vlieringen	$25 00
Geo. W. Crawford	Newark, O.	2d Best ... Miza-de-Leffinghe	10 00
H. L. Domigan	Sunbury, O.	3d Best ... Nellie	5 00
Geo. W. Crawford	Newark, O.	Best Mare 3 Years and Under 4—Bertha de Luzen	18 00
J. Crouch & Son	Lafayette, Ind	2d Best ... Romanse	6 00
Geo. W. Crawford	Newark, O.	Best Mare 2 Years and Under 3—Marguerite de Goyck..	18 00
Geo. W. Crawford	Newark, O.	2d Best ... Bella de Cortemarck	6 00
J. Crouch & Son	Lafayette, Ind	3d Best ... Gardamine	3 00
J. Crouch & Son	Lafayette, Ind	Best Filly 1 Year and Under 2—Angetine	12 00
Geo. W. Crawford	Newark, O.	2d Best ... Brunette de Wevel	5 00
Geo. W. Crawford	Newark, O.	3d Best ... Annita	3 00
W. W. Ferguson	Delaware, O	Best Filly Colt Under 1 Year—Beauty	10 00
Geo. W. Crawford	Newark, O.	Best Get of Sire	25 00
Geo. W. Crawford	Newark, O.	Best Produce of Mare	20 00

PERCHERONS.

Name of Owner.	Postoffice.	Awards.	Amount.
J. Crouch & Son	Lafayette, Ind	Best Stallion 4 Years or Over—Mirat	$25 00
J. Crouch & Son	Lafayette, Ind	2d Best ... Uhlan	10 00
McLaughlin Bros	Columbus, O	3d Best ... Secret	5 00
McLaughlin Bros	Columbus, O	Best Stallion 3 Years and Under 4—Mylord	25 00
McLaughlin Bros	Columbus, O	2d Best ... Scapieo	10 00
J. Crouch & Son	Lafayette, Ind	3d Best ... Durandal	5 00
McLaughlin Bros	Columbus, O	Best Stallion 2 Years and Under 3—Eteignor	18 00
McLaughlin Bros	Columbus, O	2d Best ... Cadix	6 00
J. Crouch & Son	Lafayette, Ind	3d Best ... Champaigne	3 00
Geo. W. Crawford	Newark, O.	Best Stallion 1 Year and Under 2—Creson	18 00
Hartman Stock Farm	Columbus, O	2d Best ... Captain	6 00
Hartman Stock Farm	Columbus, O	3d Best ... Artillery	3 00
Lonzo McClain	Lima, O	Best Stallion Colt Under 1 Year—Major	12 00
Lonzo McClain	Lima, O	2d Best ... Marquis	5 00
J. Crouch & Son	Lafayette, Ind	Best Mare 4 Years or Over—Ponpee	25 00
J. Crouch & Son	Lafayette, Ind	2d Best ... Bidette	10 00
J. Crouch & Son	Lafayette, Ind	3d Best ... Fartine	5 00
J. Crouch & Son	Lafayette, Ind	Best Mare 3 Years and Under 4—Charmille	18 00
Geo. W. Crawford	Newark, O.	2d Best ... Sireno	6 00
Geo. W. Crawford	Newark, O.	3d Best ... Andreline	3 00
Geo. W. Crawford	Newark, O.	Best Mare 2 Years and Under 3—Braisette	18 00
Geo. W. Crawford	Newark, O.	2d Best ... Zoyense	6 00
Geo. W. Crawford	Newark, O.	3d Best ... Lucia	3 00
Lonzo McClain	Lima, O	Best Filly 1 Year and Under 2—Rosaline	12 00
Geo. W. Crawford	Newark, O.	2d Best ... Fatima	5 00
McLaughlin Bros	Columbus, O	Best Get of Sire—Get of Athos	25 00
McLaughlin Bros	Columbus, O	2d Best	10 00
Lonzo McClain	Lima, O	3d Best	5 00
McLaughlin Bros	Columbus, O	Best Produce of Mare	20 00
McLaughlin Bros	Columbus, O	2d Best	8 00
Lonzo McClain	Lima, O	3d Best	4 00

CLYDESDALES AND SHIRES.

Name of Owner.	Postoffice.	Awards.	Amount.
Hartman Stock Farm	Columbus, O	Best Stallion 4 Years or Over—Palterton Old Style	$25 00
Hartman Stock Farm	Columbus, O	Best Stallion 3 Years and Under 4—Nailstone Roosevelt.	25 00
Carpenter & Ross	Mansfield, O	2d Best ... Donald McKay	10 00
Leonard & Co	London, O	Best Stallion 2 Years and Under 3—Nailstone Hero	18 00

CLYDESDALES AND SHIRES—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
Leonard & Co	London, O	Best Stallion 1 Year and Under 2—Nailstone Fox	$18 00
Leonard & Co	London, O	Best Stallion Colt Under 1 Year—Nailstone Teddy	12 00
J. M. Elliott	Hilliard, O	Best Mare 4 Years or Over—Flora	25 00
Leonard & Co	London, O	2d Best ... Nailstone Belle	10 00
Leonard & Co	London, O	Best Mare 3 Years and Under 4—Nailstone Maid	18 00
Leonard & Co	London, O	Best Get of Sire	25 00
Leonard & Co	London, O	Best Produce of Mare	20 00

AMERICAN BRED DRAFT.

Name of Owner.	Postoffice.	Awards.	Amount.
Leonard & Co	London, O	Best Stallion 4 Years or Over—Seductioner	$25 00
Lonzo McClain	Lima, O	Best Stallion 2 Years and Under 3—Brilliant	18 00
Lonzo McClain	Lima, O	2d Best ... Teddy	6 00
C. M. Jones	Plain City, O	3d Best ... Darby	3 00
C. M. Jones	Plain City, O	Best Stallion 1 Year and Under 2—Dorus	18 00
Lonzo McClain	Lima, O	2d Best ... Victor	6 00
H. R. Pumphrey	Radnor, O	3d Best ... King of Highland	3 00
Lonzo McClain	Lima, O	Best Stallion Colt Under 1 Year—Majesty	12 00
Lonzo McClain	Lima, O	Best Mare 4 Years or Over—Pride	25 00
C. M. Jones	Plain City, O	2d Best ... Phoebe	10 00
W. W. Ferguson	Delaware, O	3d Best ... Anna	5 00
H. L. Domigan	Sunbury, O	Best Mare 3 Years and Under 4—Maud	$18 00
C. M. Jones	Plain City, O	2d Best ... Sadie	6 00
Lonzo McClain	Lima, O	3d Best ... Queen	3 00
J. M. Elliott	Hilliard, O	Best Mare 2 Years and Under 3—Kate	18 00
C. M. Jones	Plain City, O	Best Filly 1 Year and Under 2	12 00
Lonzo McClain	Lima, O	2d Best ... Grace	5 00
H. L. Domigan	Sunbury, O	3d Best ... Gladdis	3 00
C. M. Jones	Plain City, O	Best Filly Colt Under 1 Year—Penelope	10 00
W. W. Ferguson	Delaware, O	2d Best ... Jet	4 00
Lonzo McClain	Lima, O	Best Mare and Produce	20 00
C. M. Jones	Plain City, O	2d Best	8 00
C. M. Jones	Plain City, O	3d Best	4 00

GRADE DRAFT.

Name of Owner.	Postoffice.	Awards.	Amount.
H. L. Domigan	Sunbury, O	Best Gelding or Mare 4 Years or Over—Mag	$12 00
H. L. Domigan	Sunbury, O	Best Gelding or Mare 2 Years and Under 3—Flaxey	12 00
J. M. Elliott	Hilliard, O	2d Best ... John	6 00
J. M. Elliott	Hilliard, O	3d Best ... Flax	2 00
J. M. Elliott	Hilliard, O	Best Gelding or Mare 1 Year and Under 2—Queen	12 00
H. L. Domigan	Sunbury, O	2d Best ... Virgie	6 00

SADDLE HORSES.

Name of Owner.	Postoffice.	Awards.	Amount.
Paul Buchanan	Indianapolis, Ind	Best Stallion 4 Years or Over—Monte Mark	$20 00
Geo. H. Cordray	London, O	2d Best ... Adam Denmark	10 00
J. B. Short	Columbus, O	3d Best ... Goodfellow	5 00
W. S. Robison	Mt. Sterling, O	Best Stallion Under 4 Years—Drennon	15 00
S. E. Helmick	Commercial Pt. O	2d Best ... J. Wilks	8 00
W. S. Robison	Mt. Sterling, O	Best Mare 4 Years or Over—Minnie	20 00
W. S. Robison	Mt. Sterling, O	2d Best ... Elma	10 00
J. B. Vanse	Lockbourne, O	3d Best ... Daisy	5 00
J. B. Vanse	Lockbourne, O	Best Gelding 4 Years or Over—Harry	20 00
J. C. O'Connell	Louisville, Ky	2d Best ... Red Berry	10 00
W. S. Robison	Mt. Sterling, O	3d Best ... Fred	5 00
J. B. Vanse	Lockbourne, O	Best Gelding Under 4 Years—Dixie	15 00

COMBINED HARNESS AND SADDLE HORSES.

Name of Owner.	Postoffice.	Awards.	Amount.
Paul Buchanan	Indianapolis, Ind	Best Stallion Any Age—Monte Mark	$20 00
W. S. Robison	Mt. Sterling, O	2d Best... Drennon	10 00
Geo. H. Cordray	London, O	3d Best... Adam Denmark	5 00
W. S. Robison	Mt. Sterling, O	Best Mare Any Age—Minnie	20 00
T. M. Byers	Columbus, O	2d Best... Lady Denmark	10 00
R. D. Bohannon	Columbus, O	3d Best... Pepper	5 00
J. C. O'Connell	Louisville, Ky	Best Gelding Any Age—Red Berry	20 00
J. B. Vanse	Lockbourne, O	2d Best... Harry	10 00
W. S. Robison	Mt. Sterling, O	3d Best... Ned	5 00

HIGH SCHOOL CLASS.

Name of Owner.	Postoffice.	Awards.	Amount.
J. Y. Bassel	Columbus, O	Best Horse, Mare or Gelding, any Age—Shenandoah	$25 00
Geo. H. Cordray	London, O	2d Best... Adam Denmark	15 00

HARNESS CLASS.

Name of Owner.	Postoffice	Awards.	Amount.
Mitchell Stock Farm	Columbus, O	Best Pair Matched Roadsters to Road Wagon or Buggy	$20 00
Anna Byerly	Columbus, O	2d Best	10 00
W. S. Robison	Mt. Sterling, O	3d Best... Billy and Barney	5 00
Mitchell Stock Farm	Columbus, O	Best Single Driver to Road Wagon or Buggy	10 00
J. C. Murray	London, O	2d Best... Early	5 00
Hartman Stock Farm	Columbus, O	Best Coach Team to Coach or Heavy Carriage	20 00
Mitchell Stock Farm	Columbus, O	2d Best	10 00
Mitchell Stock Farm	Columbus, O	Best Single Coach Mare or Gelding to Appropriate Vehicle	10 00
Mitchell Stock Farm	Columbus, O	2d Best	5 00
J. C. O'Connell	Louisville, Ky	Best Park Mare or Gelding to Appropriate Vehicle—Miss Barrymore	10 00
Mitchell Stock Farm	Columbus, O	2d Best	5 00
T. M. Byers	Columbus, O	3d Best... Lady Denmark	3 00
Mitchell Stock Farm	Columbus, O	Best Four-in-Hand Team to Coach or Brake	20 00
Mitchell Stock Farm	Columbus, O	Best Tandem Team to Two-Wheeled Cart	10 00
Hartman Stock Farm	Columbus, O	2d Best	5 00

COACHING PARADE.

Name of Owner.	Postoffice.	Awards.	Amount.
Mitchell Stock Farm	Columbus, O	Best and Most Attractive Turnout	Sil. Plate
T. M. Byers	Columbus, O	2d Best	Sil. Cup
T. M. Byers	Columbus, O	3d Best	Sil. Medal

SHETLAND PONIES.

Name of Owners.	Postoffice.	Awards.	Amount.
Horace J. Simons	Columbus, O	Best Stallion 3 Years or Over	$20 00
Cobb Gavitt	Ashley, O	2d Best	10 00
M. Irwin Dunlap	Greenfield, O	Best Stallion 2 Years and Under 3—Billy Bryan	12 00
Cobb Gavitt	Ashley, O	2d Best	6 00
Horace J. Simons	Columbus, O	Best Stallion 1 Year and Under 2	10 00
Cobb Gavitt	Ashley, O	2d Best	5 00
Cobb Gavitt	Ashley, O	Best Stallion Colt Under 1 Year	8 00
Cepter Gregg	Sunbury, O	2d Best	4 00
C. C. Hunter	Mt. Vernon, O	Best Mare 3 years or Over—Bessie Be	20 00
Horace J. Simons	Columbus, O	2d Best	10 00

SHETLAND PONIES—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
Cepter Gregg	Sunbury, O.	Best Mare 2 Years and Under 3—Nan Patterson	$12 00
Cobb Gavitt	Ashley, O.	2d Best	6 00
Cobb Gavitt	Ashley, O.	Best Filly 1 Year and Under 2	10 00
M. Irwin Dunlap	Greenfield, O.	2d Best	5 00
Cobb Gavitt	Ashley, O.	Best Filly Colt Under 1 Year	8 00
Cepter Gregg	Sunbury, O.	2d Best ..... Alice Longworth	4 00
Cobb Gavitt	Ashley, O.	Best Herd of Ten Head	20 00
M. Irwin Dunlap	Greenfield, O.	Best Sire and Get	15 00
Horace J. Simons	Columbus, O.	Best Mare and Produce	15 00

IN HARNESS TO APPROPRIATE VEHICLE.

Name of Owner.	Postoffice.	Awards.	Amount.
Butler Sheldon, Jr.	Columbus, O.	Best Single Turnout	$15 00
M. Irwin Dunlap	Greenfield, O.	2d Best	8 00
M. Irwin Dunlap	Greenfield, O.	Best Double Team Turnout	15 00
Cobb Gavitt	Ashley, O.	2d Best	8 00
Cobb Gavitt	Ashley, O.	Best Four-in-Hand	15 00
M. Irwin Dunlap	Greenfield, O.	Best Pony Under Saddle	10 00
Cepter Gregg	Sunbury, O.	2d Best	5 00

PONIES—OTHER THAN SHETLAND.

Name of Owner.	Postoffice.	Awards.	Amount.
C. C. Hunter	Mt. Vernon, O.	Best Stallion 3 Years or Over—Roy Ringling	$20 00
Myron Smith	Plain City, O.	2d Best ..... Bucephalus	10 00
Cobb Gavitt	Ashley, O.	Best Stallion 2 Years and Under 3	12 00
Cobb Gavitt	Ashley, O.	Best Stallion Under 2 Years	8 00
Cobb Gavitt	Ashley, O.	Best Mare 3 Years or Over	20 00
Cobb Gavitt	Ashley, O.	2d Best	10 00
Cobb Gavitt	Ashley, O.	Best Mare 2 Years and Under 3	12 00
Cobb Gavitt	Ashley, O.	2d Best	6 00
Cepter Gregg	Sunbury, O.	Best Filly Under 2 Years—Madam Bernhardt	8 00
C. C. Hunter	Mt. Vernon, O.	2d Best ..... Orene	4 00

IN HARNESS TO APPROPRIATE VEHICLE.

Name of Owner.	Postoffice.	Awards.	Amount.
Cobb Gavitt	Ashley, O.	Best Single Turnout	$15 00
Nellie Dunlap	Greenfield, O.	2d Best	8 00
Cobb Gavitt	Ashley, O.	Best Double Team Turnout	15 00
C. C. Hunter	Mt. Vernon, O.	2d Best ..... Lucie and Josie	8 00
Cobb Gavitt	Ashley, O.	Best Four-in-Hand	15 00
Cobb Gavitt	Ashley, O.	Best Pony Under Saddle	10 00
C. C. Hunter	Mt. Vernon, O.	2d Best ..... Bessie	5 00

WINNERS IN SPEED EVENTS.

MONDAY, SEPTEMBER 2.

2:17 CLASS TROTTING—PURSE $600.

Entered by.	Residence.	Name of Horse.	Heats.	Amount Won.
M. H. Somers	South Salem, O.	Flashlight	1 1 2 8 6	$300 00
R. P. Liter	Pt. Pleasant, W. Va.	Happy J.	4 8 6 1 1	150 00
Harry Dunn	Zanesville O	Vida	3 9 1 5 3	90 00
W. P. Murray	W. Mentor, O.	Ruben S.	8 7 3 2 2	60 00

Time—2:24½, 2:24½, 2:22¾, 2:19¼, 2:17¼.

FREE-FOR-ALL CLASS PACING—PURSE $1,000.

Entered By.	Residence.	Name of Horse.	Heats.	Amount Won.
H. A. Snyder	Wellsville, N. Y.	Elmwood	1 1 1	$500 00
Wm. Porter	Mansfield, O.	Belle Mc.	2 2 2	250 00
H. H. James	Glenville, O.	Robert Lee	3 4 3	150 00
H. D. Shepard	Columbus, O.	Endora	4 3 4	100 00

Time—2:17½, 2:18, 2:20.

2:35 CLASS TROTTING—PURSE $500.

Entered By.	Residence.	Name of Horse.	Heats.	Amount Won.
H. D. Kuger	Oxford, O.	Frank	1 1 1	$250 00
J. M. Lentz	Marysville, O.	Jack	2 2 2	125 00
R. P. Liter	Pt. Pleasant, W. Va.	Happy J.	3 3 5	75 00
J. Hay	Ashville, O.	Idleweis	5 5 3	50 00

Time—2:27¼, 2:26¼, 2:31.

TUESDAY, SEPTEMBER 3.

2:13 CLASS PACING—PURSE $800.

Entered By.	Residence.	Name of Horse.	Heats.	Amount Won.
J. E. Burns	Alpena, Mich.	Dewey G.	1 1 1	$400 00
Crist & Noble	Meadville, Pa.	Eph. Cinders	3 2 2	200 00
Chas. Slaight	Sabina, O.	Beaut Kennedy	2 4 3	120 00
Geo. Hudson	Blanchester, O.	Highland Queen	4 3 4	80 00

Time—2:12¼, 2:11¼, 2:11½.

2:23 CLASS TROTTING—PURSE $500.

Entered By.	Residence.	Name of Horse.	Heats.	Amount Won.
William Weber	Mt. Orab, O.	Nero	2 1 1 1	$250 00
Harry Dunn	Zanesville, O.	The Hoosier	1 5 2 2	125 00
R. P. Liter	Pt. Pleasant, W. Va.	Moon Maiden	3 2 5 3	75 00
J. Crouch & Son	Lafayette, Ind.	Leonard B.	5 3 4 4	50 00

Time—2:19½, 2:19¼, 2:23½, 2:18¼.

2:30 CLASS PACING—(1st Section)—PURSE $500.

Entered By.	Residence.	Name of Horse.	Heats.	Amount Won.
Geo. Wilber	Marysville, O	Mackie Boy	1 1 1	$250 00
William Wellwood	Mt. Victory, O	Lady Carr	2 2 6	125 00
C. Vallery	Waverly, O	Cadmus, Jr	3 8 2	75 00
W. W. Cook	Rushville, Ind	Bay Ball	4 3 5	50 00

Time—2:17¼, 2:18½, 2:20.

WEDNESDAY, SEPTEMBER 4.

2:30 CLASS PACING—(2d Section)—PURSE $500.

Entered By.	Residence.	Name of Horse.	Heats.	Amount Won.
W. J. O'Brien	Marysville, O	Maud H	1 1 1	$250 00
L. A. Price	Columbus, O	Toney D	3 2 2	125 00
Ernie King	Urbana, O	Billie King	2 3 3	75 00
H. J. Jameson	Delaware, O	L. F	5 4 4	50 00

Time—2:18¼, 2:19½, 2:20¼.

2:19 CLASS PACING—PURSE $600.

Entered By.	Residence.	Name of Horse.	Heats.	Amount Won.
Dr. H. H. Smith	Oxford, O	Nice Boy	1 1 1	$300 00
R. B. Long	Georgetown, Ky	Lottie M	3 2 2	150 00
Wilbur Scott	Xenia, O	Legal R., Jr	2 3 3	90 00
Bert Devaney	Washington C. H., O	John Hancock	4 7 5	60 00

Time—2:17¼, 2:16¼, 2:16¼.

2:26 CLASS TROTTING—PURSE $500.

Entered By.	Residence.	Name of Horse.	Heats.	Amount Won.
R. P. Liter	Pt. Pleasant, W. Va	Happy F	1 1 1	$250 00
Geo. Castle	Chicago, Ill	Kitty Royal	2 2 2	125 00
Dr. Jas. A. Park	Columbus, O	Nina F	3 4 7	75 00
Harry Dunn	Zanesville, O	Lady Lou	8 3 4	50 00

Time—2:22¼. 2:19¾, 2:20.

THURSDAY, SEPTEMBER 5.

2:09 CLASS PACING—PURSE $1,000.

Entered By.	Residence.	Name of Horse.	Heats.	Amount Won.
H. A. Snyder	Wellsville, N. Y	Elmwood	5 3 1 1 1	$500 00
Gertrude Wilson	Cleveland, O	Raou W	1 1 4 6 6	250 00
F. E. Freeman	Phoneton, O	William C	3 2 2 2 3	150 00
J. S. Wilson	Coalton, O	Lyddite	4 5 6 3 2	100 00

Time—2:11½, 2:10½, 2:11¼, 2:11½, 2:15½.

2:20 CLASS TROTTING—PURSE $600.

Entered By.	Residence.	Name of Horse.	Heats.	Amount Won.
C. E. Price	Washington C. H., O	Robt. Volens	1 1 1	$300 00
C. C. Watts	Boston, Mass	Dainty Dolly	2 2 2	150 00
William Weber	Mt. Orab, O	Nero	3 3 4	90 00
J. E. Burns	Alpena, Mich	Dan K	7 6 3	60 00

Time—2:18½, 2:16¼, 2:16½.

2:16 CLASS PACING—PURSE $600.

Entered By.	Residence.	Name of Horse.	Heats.	Amount Won.
Geo. Hudson	Blanchester, O.	Highland Queen	3 1 1 1	$300 00
R. Edwards	Galena, O.	Jolly Bird	1 7 5 7	150 00
S. H. Turner	Columbus, O.	Mozie L.	2 10 2 3	90 00
Geo. Castle	Chicago, Ill.	Miss Castle	8 6 3 2	60 00

Time—2:14¼, 2:14½, 2:14¼, 2:15.

FRIDAY, SEPTEMBER 6.

2:24 CLASS PACING—PURSE $500.

Entered By.	Residence.	Name of Horse.	Heats.	Amount Won.
Geo. M. Wilber	Marysville, O.	Mackey Boy	1 1 1	$250 00
D. A. Sprague	So. Charleston, O.	Mary B.	2 2 2	125 00
Chas. Rousch	Athens, O.	Bowerwood Burns	3 5 6	75 00
S. S. Ruble	Logan, O.	Peter Chimes	7 3 4	50 00

Time—2:18¼, 2:17¼, 2:17¼.

2:13 CLASS TROTTING—PURSE $800.

Entered By.	Residence.	Name of Horse.	Heats.	Amount Won.
H. H. James	Glenville, O	Quintell	2 1 1 1	$400 00
R. P. Liter	Pt. Pleasant, W. Va.	Happy J.	1 3 2 5	200 00
S. S. Ruble	Logan, O.	Electric Bow	3 2 3 2	120 00
William P. Bresnahan	Columbus, O.	Charley Atwood	5 5 5 3	80 00

Time—2:14½, 2:14½, 2:14½, 2:15¼.

2:35 CLASS PACING—PURSE $500.

Entered By.	Residence.	Name of Horse.	Heats.	Amount Won.
William Wellwood	Mt. Victory, O.	Lady Carr	1 1 1	$250 00
W. J. O'Brien	Marysville, O.	Major W.	2 2 2	125 00
F. E. Freeman	Phoneton, O.	Little Mustard	3 3 3	75 00

Time—2:16¼, 2:18, 2:22.

SECOND DEPARTMENT—CATTLE.

L. W. KILGORE—Member in Charge.

ABERDEEN-ANGUS.

Name of Owner.	Postoffice.	Awards.	Amount.
D. Bradfute & Son	Cedarville, O.	Best Bull 3 Years or Over—Lucy's Prince	$18 00
Boyd & King	Hillsboro, O.	2d Best. Beau Blackbird	12 00
D. Bradfute & Son	Cedarville, O.	Best Bull 2 Years and Under 3—Alden of Meadowbrook	18 00
H. M. Brown	Hillsboro, O.	2d Best. Wells Highlander	12 00
Boyd & King	Hillsboro, O.	Best Bull 1 Year and Under 2—Quaint Fellow	12 00
H. M. Brown	Hillsboro, O.	2d Best. Royal Prince of Cullen	6 00
D. Bradfute & Son	Cedarville, O.	3d Best. Trusty of Meadowbrook	4 00
Boyd & King	Hillsboro, O.	Best Senior Bull Calf Dropped Between Sept. 1, 1906, and Jan. 1, 1907. Black Val	10 00
H. M. Brown	Hillsboro, O.	2d Best. Valpex	6 00
D. Bradfute & Son	Cedarville, O	3d Best. Lee of Meadowbrook	4 00
H. M. Brown	Hillsboro, O.	Best Junior Bull Calf Dropped Since Jan. 1, 1907—Chatham of Highland County	10 00
H. M. Brown	Hillsboro, O.	2d Best. Royalist of Highland County	6 00
D. Bradfute & Son	Cedarville, O	3d Best. Leroy 2d of Meadowbrook	4 00
D. Bradfute & Son	Cedarville, O	4th Best. Teddy of Meadowbrook	2 00
D. Bradfute & Son	Cedarville, O	Best Cow 3 Years or Over—Minnie of Meadowbrook	18 00
Boyd & King	Hillsboro, O.	2d Best. Naomie of Bonnie Brook	12 00
D. Bradfute & Son	Cedarville, O	3d Best. Twill of Meadowbrook	6 00
H. M. Brown	Hillsboro, O.	Best Cow or Heifer 2 Years and Under 3—Lovely Mayflower	18 00
Boyd & King	Hillsboro, O.	2d Best. Grabille	12 00
D. Bradfute & Son	Cedarville, O	3d Best. Winnie 2d of Meadowbrook	6 00
H. M. Brown	Hillsboro, O.	Best Heifer 1 Year and Under 2—Her Majesty 2d	12 00
Boyd & King	Hillsboro, O.	2d Best. Kenwood Belle	6 00
D. Bradfute & Son	Cedarville, O.	3d Best. Lavender 4th of Meadowbrook.	4 00
D. Bradfute & Son	Cedarville, O	Best Senior Heifer Calf Dropped Between Sept. 1, 1906, and Jan. 1, 1907—Hester of Meadowbrook	10 00
D. Bradfute & Son	Cedarville, O	2d Best. Lilac 2d of Meadowbrook	6 00
D. Bradfute & Son	Cedarville, O	3d Best. Bonnie 3d of Meadowbrook	4 00
Boyd & King	Hillsboro, O.	4th Best. Kenwood Peach Bloom	2 00
H. M. Brown	Hillsboro, O.	Best Junior Heifer Calf Dropped Since Jan. 1, 1907—Young Martha	10 00
D. Bradfute & Son	Cedarville, O	2d Best. Bernice of Meadowbrook	6 00
H. M. Brown	Hillsboro, O.	3d Best. Cora of Highland County	4 00
D. Bradfute & Son	Cedarville, O.	4th Best. Queen Anne of Meadowbrook	2 00
D. Bradfute & Son	Cedarville, O	Best Exhibitor's Herd	35 00
H. M. Brown	Hillsboro, O.	2d Best	25 00
Boyd & King	Hillsboro, O.	3d Best	15 00
H. M. Brown	Hillsboro, O.	Best Breeder's Young Herd	35 00
Boyd & King	Hillsboro, O.	2d Best	25 00
D. Bradfute & Son	Cedarville, O.	3d Best	15 00
D. Bradfute & Son	Cedarville, O	Best Calf Herd	30 00
H. M. Brown	Hillsboro, O.	2d Best	20 00
H. M. Brown	Hillsboro, O.	Best Get of Sire	25 00
D. Bradfute & Son	Cedarville, O	2d Best	15 00
D. Bradfute & Son	Cedarville, O	3d Best	10 00
H. M. Brown	Hillsboro, O.	Best Produce of Cow	25 00
Boyd & King	Hillsboro, O.	2d Best	15 00
D. Bradfute & Son	Cedarville, O	3d Best	10 00
		Champions.	
D. Bradfute & Son	Cedarville, O.	Champion Bull, Over 2 Years—Lucy's Prince	10 00
D. Bradfute & Son	Cedarville, O.	Champion Cow Over 2 Years—Winnie of Meadowbrook	10 00
Boyd & King	Hillsboro, O.	Champion Bull Under 2 Years	10 00
H. M. Brown	Hillsboro, O.	Champion Cow Under 2 Years	10 00

HEREFORDS.

Name of Owner.	Postoffice.	Awards.	Amount.
A. C. Huxley	Bunker Hill, Ind.	Best Bull 3 Years or Over—Perfection Fairfax	$22 00
S. W. Anderson	Baker Mills, W. Va.	2d Best....Mapleton	15 00
W. T. McCray	Kentland, Ind.	Best Bull 2 Years and Under 3—Prime Lad 16th	22 00
G. F. Cook	Oxford, O.	2d Best....Royal Prince	15 00
A. C. Huxley	Bunker Hill, Ind.	Best Bull 1 Year and Under 2—Beau Armour 2d	16 00
S. W. Anderson	Baker Mills, W. Va.	2d Best....Mapleton 2d	9 00
S. W. Anderson	Baker Mills, W. Va.	3d Best....Pope 2d	7 00
S. W. Anderson	Baker Mills, W. Va.	Best Senior Bull Calf Dropped Between Sept. 1, 1906, and Jan. 1, 1907....Mapleton 6th	14 00
S. W. Anderson	Baker Mills, W. Va.	2d Best....Pope 5th	9 00
A. C. Huxley	Bunker Hill, Ind.	3d Best....Perfection Fairfax	7 00
S. W. Anderson	Baker Mills, W. Va.	Best Junior Bull Calf Dropped Since Jan. 1, 1907—Mapleton 7th	14 00
W. T. McCray	Kentland, Ind.	Best Cow 3 Years or Over—Phoebe	22 00
A. C. Huxley	Bunker Hill, Ind.	2d Best....Lady Real 30th	15 00
S. W. Anderson	Baker Mills, W. Va.	3d Best....Isabelle	9 00
W. T. McCray	Kentland, Ind.	Best Cow or Heifer 2 Years and Under 3—Prairie Queen	22 00
A. C. Huxley	Bunker Hill, Ind.	2d Best....Jemima	15 00
S. W. Anderson	Baker Mills, W. Va.	3d Best....Actress 20th	9 00
A. C. Huxley	Bunker Hill, Ind.	Best Heifer 1 Year and Under 2—Aileen Donald 2d	16 00
W. T. McCray	Kentland, Ind.	2d Best....Diana Fairfax	9 00
S. W. Anderson	Baker Mills, W. Va.	3d Best....Actress 25th	7 00
A. C. Huxley	Bunker Hill, Ind.	Best Senior Heifer Calf Dropped Between Sept. 1, 1906, and Jan. 1, 1907—Lady Fairfax 3d	14 00
W. T. McCray	Kentland, Ind.	2d Best....Dorothy Tenent	9 00
S. W. Anderson	Baker Mills, W. Va.	3d Best....Dorothy Grove	7 00
S. W. Anderson	Baker Mills, W. Va.	4th Best....Lennie 2d	3 00
A. C. Huxley	Bunker Hill, Ind.	Best Junior Heifer Calf Dropped Since Jan. 1, 1907—Lady Fairfax 6th	14 00
A. C. Huxley	Bunker Hill, Ind.	2d Best....Lady Fairfax 4th	9 00
G. F. Cook	Oxford, O.	3d Best....Dinah Orr	7 00
A. C. Huxley	Bunker Hill, Ind.	Best Exhibitor's Herd	40 00
W. T. McCray	Kentland, Ind.	2d Best	30 00
S. W. Anderson	Baker Mills, W. Va.	3d Best	20 00
A. C. Huxley	Bunker Hill, Ind.	Best Breeder's Young Herd	40 00
S. W. Anderson	Baker Mills, W. Va.	2d Best	30 00
G. F. Cook	Oxford, O.	3d Best	20 00
A. C. Huxley	Bunker Hill, Ind.	Best Calf Herd	35 00
A. C. Huxley	Bunker Hill, Ind.	Best Get of Sire	30 00
S. W. Anderson	Baker Mills, W. Va.	2d Best	20 00
A. C. Huxley	Bunker Hill, Ind.	3d Best	15 00
A. C. Huxley	Bunker Hill, Ind.	Best Produce of Cow	30 00
S W. Anderson	Baker Mills, W. Va.	2d Best	20 00
S. W. Anderson	Baker Mills, W. Va.	3d Best	15 00
		Champions.	
A. C. Huxley	Bunker Hill, Ind.	Champion Bull Over 2 Years—Perfection Fairfax	15 00
W. T. McCray	Kentland, Ind.	Champion Cow Over 2 Years—Phoebe	15 00
S W. Anderson	Baker Mills, W. Va.	Champion Bull Under 2 Years—Mapleton 6th	15 00
A. C. Huxley	Bunker Hill, Ind.	Champion Cow or Heifer Under 2 Years—Lady Fairfax 6th	15 00

POLLED DURHAMS.

Name of Owner.	Postoffice.	Awards.	Amount.
Chas. Wright	Paris Crossing, Ind.	Best Bull 3 Years or Over—Buttonwood Marshal	$18 00
Oscar Hadley	Plainfield, Ind.	Best Bull 1 Year and Under 2—Early Boy	12 00
Chas. Wright	Paris Crossing, Ind.	2d Best....Golden King	6 00
Oscar Hadley	Plainfield, Ind.	Best Senior Bull Calf Dropped Between Sept. 1, 1906, and Jan. 1, 1907—Buttonwood Marshal 21st	10 00
Oscar Hadley	Plainfield, Ind.	2d Best....Buttonwood Marshal 22d	6 00
Chas. Wright	Paris Crossing, Ind.	3d Best....Chief Marshal	4 00
Chas. Wright	Paris Crossing, Ind.	Best Junior Bull Calf Dropped Since Jan. 1, 1907—Sugar Trojan	$10 00
Chas. Wright	Paris Crossing, Ind.	Best Cow 3 Years or Over—Buttonwood Eva	18 00
Chas. Wright	Paris Crossing, Ind.	Best Cow or Heifer 2 Years and Under 3—Buttonwood Louise 2d	18 00
Chas. Wright	Paris Crossing, Ind.	2d Best....Buttonwood Eva 2d	12 00
Oscar Hadley	Plainfield, Ind.	Best Heifer 1 Year and Under 2—Buttonwood Duchess	12 00
Oscar Hadley	Plainfield, Ind.	2d Best....Zaddal 4th	6 00
Chas. Wright	Paris Crossing, Ind.	3d Best....Maud M.	4 00
Oscar Hadley	Plainfield, Ind.	Best Senior Heifer Calf Dropped Between Sept. 1, 1906, and Jan. 1, 1907—Buttonwood Maud	10 00
Oscar Hadley	Plainfield, Ind.	2d Best....Buttonwood Jenny Lynd 4th	6 00
Oscar Hadley	Plainfield, Ind.	3d Best....Buttonwood Lassie 4th	4 00

POLLED DURHAMS—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
Chas. Wright	Paris Crossing, Ind.	4th Best.............Fair Helen	$2 00
Chas. Wright	Paris Crossing, Ind.	Best Exhibitor's Herd	35 00
Oscar Hadley	Plainfield, Ind.	Best Breeder's Young Herd	35 00
Oscar Hadley	Plainfield, Ind.	2d Best	25 00
Oscar Hadley	Plainfield, Ind.	Best Calf Herd	30 00
Oscar Hadley	Plainfield, Ind.	Best Get of Sire	25 00
Oscar Hadley	Plainfield, Ind.	2d Best	15 00
Oscar Hadley	Plainfield, Ind.	Best Produce of Cow	25 00
Oscar Hadley	Plainfield, Ind.	2d Best	15 00
Chas. Wright	Paris Crossing, Ind.	3d Best	10 00
		Champions.	
Chas. Wright	Paris Crossing, Ind.	Champion Bull Over 2 Years—Buttonwood Marshal	10 00
Chas. Wright	Paris Crossing, Ind.	Champion Cow Over 2 Years—Buttonwood Lassie 2d	10 00
Oscar Hadley	Plainfield, Ind.	Champion Bull Under 2 Years—Buttonwood Marshal 19	10 00
Oscar Hadley	Plainfield, Ind.	Champion Cow Under 2 Years—Buttonwood Maud	10 00

SHORTHORNS.

Name of Owner.	Postoffice.	Awards.	Amount.
D. R. Hanna	Ravenna, O.	Best Bull 3 Years or Over—Missie's Diamond	$18 00
Carpenter & Ross	Mansfield, O.	2d Best..................Scotch Mist	12 00
N. W. Wagner	Fremont, O.	3d Best..................Marshal's Best	6 00
Carpenter & Ross	Mansfield, O.	Best Bull 2 Years and Under 3—Avondale	18 00
Thomas Johnson	Columbus, O.	2d Best......................Glen Brook Sultan	12 00
D. R. Hanna	Ravenna, O.	3d Best......................Diamond's Mariner	6 00
Hunter & Evans	Mechanicsburg, O.	Best Senior Bull 1 Year and Under 2—Diamond Dust	12 00
Jonas Dininger & Son	Greenville, O.	2d Best..........................Goster's Wonder	6 00
R. R. West & Son	Hillsboro, O.	3d Best........................Perth's Commander	4 00
Thomas Johnson	Columbus, O.	Best Jr. Bull 1 Year and Under 2—Proud Sultan	12 00
W. I. Wood	Williamsport, O.	2d Best.......................Royal Champion	6 00
D. R. Hanna	Ravenna, O.	3d Best.......................Merry Robbin	4 00
D. R. Hanna	Ravenna, O.	Best Senior Bull Calf Dropped Between Sept. 1, 1906, and Jan. 1, 1907—..........Diamond's Earl	10 00
Thomas Johnson	Columbus, O.	2d Best...................Sitation's Secret	6 00
Thomas Johnson	Columbus, O.	3d Best...................Glen Brook Champion	4 00
Carpenter & Ross	Mansfield, O.	4th Best...................Wall Street	2 00
W. I. Wood	Williamsport, O.	5th Best...................Woodland	1 00
Carpenter & Ross	Mansfield, O.	Best Junior Bull Calf Dropped Since Jan. 1, 1907—Barraster	10 00
N. W. Wagner	Fremont, O.	2d Best............Young Sultan	6 00
N. S. McKay & Son	Xenia, O.	3d Best............Synonym 2d	4 00
D. R. Hanna	Ravenna, O.	4th Best............Spicy Robin	2 00
Carpenter & Ross	Mansfield, O.	5th Best............Dandelion	1 00
N. W. Wagner	Fremont, O.	Best Cow 3 Years or Over—Lady Marshall	18 00
Carpenter & Ross	Mansfield, O.	2d Best..................Thorny Budd	12 00
D. R. Hanna	Ravenna, O.	3d Best..................Moss Rose 4th	6 00
D. R. Hanna	Ravenna, O.	Best Cow or Heifer 2 Years and Under 3—Lady Mysie 2d	18 00
N. W. Wagner	Fremont, O.	2d Best.................Lucy Ann 2d	12 00
Carpenter & Ross	Mansfield, O.	3d Best.................Browndale	6 00
Carpenter & Ross	Mansfield, O.	Best Senior Heifer 1 Year and Under 2—Mina Princess 6th	12 00
Thomas Johnson	Columbus, O.	2d Best................Sinnissippa Lady	6 00
Jonas Dininger & Son	Greenville, O.	3d Best................Sugar Grove Maid	4 00
Carpenter & Ross	Mansfield, O.	Best Junior Heifer 1 Year and Under 2—. Sweet Duchess of Glouster	12 00
Carpenter & Ross	Mansfield, O.	2d Best	6 00
D. R. Hanna	Ravenna, O.	3d Best	4 00
N. W. Wagner	Fremont, O.	4th Best	2 00
D. R. Hanna	Ravenna, O.	Best Senior Heifer Calf Dropped Between Sept. 1, 1906, and Jan. 1, 1907—Royal Lady	10 00
D. R. Hanna	Ravenna, O.	2d Best.............Missie 2d	6 00
Thomas Johnson	Columbus, O.	3d Best.............Archer's Darling	4 00
D. R. Hanna	Ravenna, O.	4th Best.............Sultana's Secret	2 00
N. W. Wagner	Fremont, O.	Best Junior Heifer Calf Dropped Since Jan. 1, 1907—Princess Marshal	10 00
Jonas Dininger & Son	Greenville, O.	2d Best..............Lady Gloster	6 00
Thomas Johnson	Columbus, O.	3d Best..............Village Rosebud	4 00
R. K. Beam & Son	Ansonia, O.	4th Best	2 00
D. R. Hanna	Ravenna, O.	Best Exhibitor's Herd	35 00
Carpenter & Ross	Mansfield, O.	2d Best	25 00
Thomas Johnson	Columbus, O.	3d Best	15 00
D. R. Hanna	Ravenna, O.	Best Breeder's Young Herd	35 00
Carpenter & Ross	Mansfield, O.	2d Best	25 00
Jonas Dininger & Son	Greenville, O.	3d Best	15 00

SHORTHORNS—Concluded

Name of Owner.	Postoffice.	Awards.	Amount.
D. R. Hanna	Ravenna, O.	Best Calf Herd	$30 00
Carpenter & Ross	Mansfield, O.	2d Best	20 00
N. S. McKay & Son	Xenia, O.	3d Best	10 00
Carpenter & Ross	Mansfield, O.	Best Get of Sire	25 00
N. W. Wagner	Fremont, O.	2d Best	15 00
Jonas Dininger & Son	Greenville, O.	3d Best	10 00
N. W. Wagner	Fremont, O.	Best Produce of Cow	25 00
Carpenter & Ross	Mansfield, O.	2d Best	15 00
D. R. Hanna	Ravenna, O.	3d Best	10 00
		Champions.	
D. R. Hanna	Ravenna, O.	Champion Bull Over 2 Years—Missie's Diamond	10 00
N. W. Wagner	Fremont, O.	Champion Cow Over 2 Years—Lady Marshall	10 00
Thomas Johnson	Columbus, O.	Champion Bull Under 2 Years—Proud Sultan	10 00
Carpenter & Ross	Mansfield, O.	Champion Cow or Heifer Under 2 Years—Sweet Duchess of Gloster	10 00
D. R. Hanna	Ravenna, O.	Grand Champion Bull—Missie's Diamond	10 00
N. W. Wagner	Fremont, O.	Grand Champion Female—Lady Marshall	10 00

JERSEYS.

Name of Owner.	Postoffice.	Awards.	Amount.
S. B. Hartman	Columbus, O.	Best Bull 3 Years or Over—Tormentor's Jubilee	$18 00
W. R. Spann	Dallas, Texas	2d Best Marrvath Flying Fox	12 00
Hart Wallace	Shelbyville, Ky.	3d Best Galway	6 00
W. R. Spann	Dallas, Texas	Best Bull 2 Years and Under 3—Eminersts Goldmont Lad	18 00
C. B. Ross	Level, O.	2d Best Lucy's Rioter of St. L. 2d	12 00
Geo. W. Gill	Mt. Victory, O.	3d Best Nora Wanda's Exile	6 00
S. B. Hartman	Columbus, O.	Best Bull 1 Year and Under 2—Tonona's Tormentor	12 00
Hart Wallace	Shelbyville, Ky.	2d Best Nobleman of Kleinwood	6 00
The Sears & Nichols Co.	Chillicothe, O.	3d Best Foxy Boy of Sugar Loaf	4 00
W. R. Spann	Dallas, Texas	Best Senior Bull Calf Dropped Between Sept. 1, 1906, and Jan. 1, 1907 Jewell of Raleigh	10 00
Hart Wallace	Shelbyville, Ky.	2d Best Peter Pan of Kleinwood	6 00
The Sears & Nichols Co.	Chillicothe, O.	3d Best Romoniom of Sugar Loaf	4 00
C. B. Ross	Level, O.	4th Best Exile of Bonnie Silver Tip	2 00
Hart Wallace	Shelbyville, Ky.	Best Junior Bull Calf Dropped Since Jan. 1, 1907—Gold Foil of Kleinwood	10 00
The Sears & Nichols Co.	Chillicothe, O.	2d Best Vexer's Golden Lad	6 00
C. B. Ross	Level, O.	3d Best Exile of Clover Leaf	4 00
Jonas Dininger & Son	Greenville, O.	4th Best Bessie's King of St. Lambert	2 00
W. R. Spann	Dallas, Texas	Best Cow 3 Years or Over—Frankie	18 00
W. R. Spann	Dallas, Texas	2d Best Fox Lily	12 00
S. B. Hartman	Columbus, O.	3d Best Hood Farm Golden Beauty	6 00
Hart Wallace	Shelbyville, Ky.	Best Cow or Heifer 2 Years and Under 3—Lady Sultana of Kleinwood	18 00
W. R. Spann	Dallas, Texas	2d Best Fox Red Lily	12 00
Hart Wallace	Shelbyville, Ky.	3d Best Tipsy Sultana of Kleinwood	6 00
Hart Wallace	Shelbyville, Ky.	Best Heifer 1 Year and Under 2—Nora of Kleinwood	12 00
W. R. Spann	Dallas, Texas	2d Best	6 00
The Sears & Nichols Co.	Chillicothe, O.	3d Best Golden Peter's Belle	4 00
W. R. Spann	Dallas, Texas	Best Senior Heifer Calf Dropped Between Sept. 1, 1906, and Jan. 1, 1907	10 00
The Sears & Nichols Co.	Chillicothe, O.	2d Best Mattie of Sugar Loaf	6 00
The Sears & Nichols Co.	Chillicothe, O.	3d Best Pink of Sugar Loaf	4 00
S. B. Hartman	Columbus, O.	4th Best Silvereen's Lady Rosette	2 00
Jonas Dininger & Son	Greenville, O.	Best Junior Heifer Calf Dropped Since Jan. 1, 1907—Gilt Edge Rose	10 00
W. R. Spann	Dallas, Texas	2d Best	6 00
Hart Wallace	Shelbyville, Ky.	3d Best Pansy of Kleinwood	4 00
The Sears & Nichols Co.	Chillicothe, O.	4th Best Inez of Sugar Loaf	2 00
W. R. Spann	Dallas, Texas	Best Exhibitor's Herd	35 00
Hart Wallace	Shelbyville, Ky.	2d Best	25 00
S. B. Hartman	Columbus, O.	3d Best	15 00
Hart Wallace	Shelbyville, Ky.	Best Breeder's Young Herd	35 00
The Sears & Nichols Co.	Chillicothe, O.	2d Best	25 00
C. B. Ross	Level, O.	3d Best	15 00
W. R. Spann	Dallas, Texas	Best Get of Sire	25 00
Hart Wallace	Shelbyville, Ky.	2d Best	15 00
The Sears & Nichols Co.	Chillicothe, O.	3d Best	10 00
W. R. Spann	Dallas, Texas	Best Produce of Cow	25 00
Hart Wallace	Shelbyville, Ky.	2d Best	15 00
Jonas Dininger & Son	Greenville, O.	3d Best	10 00

JERSEYS—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
		Champions.	
W. R. Spann	Dallas, Texas	Champion Bull Over 2 Years—Eminent's Goldmont Lad	$10 00
W. R. Spann	Dallas, Texas	Champion Cow Over 2 Years—Frankie	10 00
W. R. Spann	Dallas, Texas	Champion Bull Under 2 Years—Jewell of Raleigh	10 00
Hart Wallace	Shelbyville, Ky	Champion Cow or Heifer Under 2 Years—Nora of Kleinwood	10 00

HOLSTEINS.

Name of Owner.	Postoffice.	Awards.	Amount.
W. H. Wylie	Houston, Pa	Best Bull 3 Years or Over—Prince Honland	$18 00
Derrer Bros	Camp Chase, O	2d Best Johanna De Colantha Lad	12 00
J. R. Ross & Sons	Blanchester, O	3d Best	6 00
W. H. Wylie	Houston, Pa	Best Bull 2 Years and Under 3—Inka Regas Johanna Paul.	18 00
J. R. Ross & Sons	Blanchester, O	2d Best	12 00
Derrer Bros	Camp Chase, O	3d Best Dousa Pride of River	6 00
J. R. Ross & Sons	Blanchester, O	Best Bull 1 Year and Under 2—	12 00
W. H. Wylie	Houston, Pa	2d Best Iros Astis Honland	6 00
F. G. Johnston	Columbus, O., St. B	3d Best Billy Bonheur De Kol	4 00
J. R. Ross & Sons	Blanchester, O	Best Senior Bull Calf Dropped Between Sept. 1, 1906, and Jan. 1, 1907	10 00
W. H. Wylie	Houston, Pa	2d Best	6 00
W. H. Wylie	Houston, Pa	3d Best	4 00
J. R. Ross & Sons	Blanchester, O	Best Junior Bull Calf Dropped Since Jan. 1, 1907	10 00
W. H. Wylie	Houston, Pa	2d Best	6 00
Derrer Bros	Camp Chase, O	Best Cow 3 Years or Over—Dulcina 2d's Clothilde	18 00
Derrer Bros	Camp Chase, O	2d Best Patsey Devries	12 00
J. R. Ross & Sons	Blanchester, O	3d Best	6 00
F. G. Johnston	Columbus, O., Sta B.	Best Cow or Heifer 2 Years and Under 3—Queen Eloise	18 00
Derrer Bros	Camp Chase, O	2d Best Mercede's Clothilde 2d	12 00
W. H. Wylie	Houston, Pa	3d Best Schnilling Aaltje Twisk	6 00
Derrer Bros	Camp Chase, O	Best Heifer 1 Year and Under 2—Popular 2d	12 00
W. H. Wylie	Houston, Pa	2d Best Edna Fairs' Eva Clothilde	6 00
Derrer Bros	Camp Chase, O	3d Best Sally Devries 2d	4 00
J. R. Ross & Sons	Blanchester, O	Best Senior Heifer Calf Dropped Between Sept. 1, 1906, and Jan. 1, 1907	10 00
W. H. Wylie	Houston, Pa	2d Best Leona Pender 4th	6 00
Derrer Bros	Camp Chase, O	3d Best Rosa Bonheur Dulcina	4 00
J. R. Ross & Sons	Blanchester, O	4th Best	2 00
J. R. Ross & Sons	Blanchester, O	Best Junior Heifer Calf Dropped Since Jan. 1, 1907	10 00
J. R. Ross & Sons	Blanchester, O	2d Best	6 00
F. G. Johnston	Columbus, O., St. B.	3d Best Orphan Girl De Kol	4 00
W. H. Wylie	Houston, Pa	4th Best Daisy Ray's 3d	2 00
W. H. Wylie	Houston, Pa	Best Exhibitor's Herd	35 00
Derrer Bros	Camp Chase, O	2d Best	25 00
J. R. Ross & Sons	Blanchester, O	3d Best	15 00
J. R. Ross & Sons	Blanchester, O	Best Breeders' Young Herd	35 00
W. H. Wylie	Houston, Pa	2d Best	25 00
W. H. Wylie	Houston, Pa	Best Get of Sire	25 00
Derrer Bros	Camp Chase, O	2d Best	15 00
J. R. Ross & Sons	Blanchester, O	3d Best	10 00
J. R. Ross & Sons	Blanchester, O	Best Produce of Cow	25 00
W. H. Wylie	Houston, Pa	2d Best	15 00
Derrer Bros	Camp Chase, O	3d Best	10 00
		Champions.	
W. H. Wylie	Houston, Pa	Champion Bull Over 2 Years—Prince of Honland	10 00
Derrer Bros	Camp Chase, O	Champion Cow Over 2 Years—Dulcina 2d Clothilde	10 00
D R. Ross & Sons	Blanchester, O	Champion Bull Under 2 Years	10 00
Derrer Bros	Camp Chase, O	Champion Cow or Heifer Under 2 Years—Popular 2d	10 00

RED POLLS.

Name of Owner.	Postoffice.	Awards.	Amount.
Frank Hartline	Strasburg, O	Best Bull 3 Years or Over—Nailer	$15 00
C. A. Shurtz	Gaysport, O	2d Best Melton	10 00
C. J. Buchanan	Indianapolis, Ind. 320 N. Ill. St.	3d Best Cranberry	5 00

RED POLLS—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
C. J. Buchanan	Indianapolis, Ind... 320 N. Ill. St.	Best Bull 2 Years and Under 3—Flanner	$15 00
C. A. Shurtz	Gaysport, O	Best Bull 1 Year and Under 2—Prince	10 00
C. J. Buchanan	Indianapolis, Ind	2d Best...George W	7 00
Frank Hartline	Strasburg, O	Best Bull Under 1 Year—Philip	8 00
C. A. Shurtz	Gaysport, O	2d Best...Captain	5 00
Frank Hartline	Strasburg, O	3d Best...Dan	3 00
C. A. Shurtz	Gaysport, O	Best Cow 3 Years or Over—Queen Bess	15 00
C. J. Buchanan	Indianapolis, Ind	2d Best...Cassandra 2d	10 00
Frank Hartline	Strasburg, O	3d Best...Miss McKinley	5 00
Frank Hartline	Strasburg, O	Best Cow or Heifer 2 Years and Under 3—Lillie	15 00
C. A. Shurtz	Gaysport, O	2d Best...Mayflower	10 00
Frank Hartline	Strasburg, O	3d Best...Cassie	5 00
C. A. Shurtz	Gaysport, O	Best Heifer 1 Year and Under 2—Midget	10 00
Frank Hartline	Strasburg, O	2d Best...Elsie	7 00
C. A. Shurtz	Gaysport, O	3d Best...Red Rose	4 00
Frank Hartline	Strasburg, O	Best Heifer Under 1 Year—Luella	8 00
C. A. Shurtz	Gaysport, O	2d Best...Juliette	5 00
Frank Hartline	Strasburg, O	3d Best...Nightingale	3 00
Frank Hartline	Strasburg, O	Best Exhibitor's Herd	25 00
C. A. Shurtz	Gaysport, O	2d Best	15 00
C. J. Buchanan	Indianapolis, Ind	3d Best	10 00
C. A. Shurtz	Gaysport, O	Best Breeders' Young Herd	25 00
Frank Hartline	Strasburg, O	2d Best	15 00
C. J. Buchanan	Indianapolis, Ind	3d Best	10 00
Frank Hartline	Strasburg O	Best Get of Sire	15 00
C. A. Shurtz	Gaysport, O	2d Best	10 00
C. J. Buchanan	Indianapolis, Ind	3d Best	5 00
C. A. Shurtz	Gaysport, O	Best Produce of Cow	15 00
C. A. Shurtz	Gaysport, O	2d Best	10 00
Frank Hartline	Strasburg, O	3d Best	5 00

GALLOWAYS.

Name of Owner.	Postoffice.	Awards.	Amount.
J. Frantz & Son	Bluffton, O	Best Bull 3 Years or Over—Rambler of Corn Belt	$15 00
J. Frantz & Son	Bluffton, O	Best Bull 2 Years and Under 3—Prince of Maple Grove	15 00
J. Frantz & Son	Bluffton, O	Best Bull 1 Year and Under 2—Norman of Maple Grove.	10 00
J. Frantz & Son	Bluffton, O	Best Bull Under 1 Year—Scottish Mack	8 00
J. Frantz & Son	Bluffton, O	2d Best...Santor Mack	5 00
J. Frantz & Son	Bluffton, O	Best Cow 3 Years or Over—Mamie of Maple Grove	15 00
J. Frantz & Son	Bluffton, O	2d Best...Vesta of Maple Grove	10 00
J. Frantz & Son	Bluffton, O	Best Cow or Heifer 2 Years and Under 3—Susannah Pride	15 00
J Frantz & Son	Bluffton, O	2d Best...Norma, Jr	10 00
J. Frantz & Son	Bluffton, O	Best Heifer 1 Year and Under 2—Cosy of Maple Grove	10 00
J. Frantz & Son	Bluffton, O	2d Best...Rosy May	7 00
J. Frantz & Son	Bluffton, O	Best Heifer Under 1 Year—Scottish Queen	8 00
J. Frantz & Son	Bluffton, O	2d Best...Scottish Mist	5 00
J. Frantz & Son	Bluffton, O	Best Exhibitors' Herd	25 00
J. Frantz & Son	Bluffton, O	2d Best	15 00
J. Frantz & Son	Bluffton, O	Best Breeders' Young Herd	25 00
J. Frantz & Son	Bluffton, O	Best Get of Sire	15 00
J. Frants & Son	Bluffton, O	2d Best	10 00
J. Frantz & Son	Bluffton, O	Best Produce of Cow	15 00
J. Frantz & Son	Bluffton, O	2d Best	10 00

BROWN SWISS.

Name of Owner.	Postoffice.	Awards.	Amount.
A. F. Wampler	Dayton, O., R. R. 1.	Best Bull 3 Years or Over—Stub Scott	$15 00
Hull Bros	Painesville, O	Best Bull 2 Years and Under 3—McAvoy	15 00
Hull Bros	Painesville, O	2d Best Bull 1 Year and Under 2—Bessie's Kid	7 00
Hull Bros	Painesville, O	3d Best...Beauty's Kid	4 00
A. F. Wampler	Dayton, O	Best Bull Under 1 Year—Jasper II	8 00
Hull Bros	Painesville, O	2d Best...Dan of Lake View	5 00
Hull Bros	Painesville, O	3d Best...Don of Lake View	3 00
Hull Bros	Painesville, O	Best Cow 3 Years or Over—Annie Darling 3d	15 00
Hull Bros	Painesville, O	2d Best...Bethlehem	10 00

BROWN SWISS—Concluded.

Name of Owner...	Postoffice.	Awards.	Amount.
Hull Bros.	Painesville, O.	Best Cow or Heifer 2 Years and Under 3—Elizabeth H.	$15 00
Hull Bros.	Painesville, O.	2d Best.... Lucile H.	10 00
Hull Bros.	Painesville, O.	Best Heifer 1 Year and Under 2—Doris of Lake View	10 00
A. F. Wampler	Dayton, O.	2d Best.... Lauterback	7 00
A. F. Wampler	Dayton, O.	3d Best.... Valley Queen of Lake View	4 00
Hull Bros.	Painesville, O.	Best Heifer Under 1 Year—Irene H. 2d	8 00
A. F. Wampler	Dayton, O.	2d Best.... Queen of Still Water	5 00
Hull Bros.	Painesville, O.	3d Best.... Ruth H. 3d	3 00
Hull Bros.	Painesville, O.	Best Exhibitor's Herd	25 00
Hull Bros.	Painesville, O.	Best Breeder's Young Herd	25 00
A. F. Wampler	Dayton, O.	2d Best	15 00
Hull Bros.	Painesville, O.	Best Get of Sire	15 00
Hull Bros.	Painesville, O.	Best Produce of Cow	15 00
Hull Bros.	Painesville, O.	2d Best	10 00

AYRSHIRES.

Name of Owner.	Postoffice.	Awards.	Amount.
Howard Cook & Son	Beloit, O.	Best Bull 3 Years or Over	$15 00
Howard Cook & Son	Beloit, O.	Best Bull 2 years and Under 3	15 00
Howard Cook & Son	Beloit, O.	Best Bull 1 Year and Under 2	10 00
Howard Cook & Son	Beloit, O.	Best Bull Under 1 Year	8 00
Howard Cook & Son	Beloit, O.	Best Cow 3 Years or Over	15 00
Howard Cook & Son	Beloit, O.	2d Best	10 00
Howard Cook & Son	Beloit, O.	Best Cow or Heifer 2 Years and Under 3	15 00
Howard Cook & Son	Beloit, O.	2d Best	10 00
Howard Cook & Son	Beloit, O.	Best Heifer 1 Year and Under 2	10 00
Howard Cook & Son	Beloit, O.	2d Best	7 00
Howard Cook & Son	Beloit, O.	Best Heifer Under 1 Year	8 00
Howard Cook & Son	Beloit, O.	2d Best	5 00
Howard Cook & Son	Beloit, O.	3d Best	3 00
Howard Cook & Son	Beloit, O.	Best Exhibitor's Herd	25 00
Howard Cook & Son	Beloit, O.	2d Best	15 00
Howard Cook & Son	Beloit, O.	Best Breeder's Young Herd	25 00
Howard Cook & Son	Beloit, O.	Best Get of Sire	15 00
Howard Cook & Son	Beloit, O.	2d Best	10 00
Howard Cook & Son	Beloit, O.	Best Produce of Cow	15 00
Howard Cook & Son	Beloit, O.	2d Best	10 00

GUERNSEYS.

Name of Owner.	Postoffice.	Awards.	Amount.
W. D. Phelps	Westerville, O.	Best Bull 3 Years or Over—Buckeye Joe	$15 00
W. D. Phelps	Westerville, O.	2d Best Bull 2 Years and Under 3—Duke of Walnut	10 00
W. D. Phelps	Westerville, O.	Best Bull 1 Year and Under 2—Golden Joe	10 00
W. D. Phelps	Westerville, O.	2d Best.... Surprise	7 00
W. D. Phelps	Westerville, O.	Best Bull Under 1 Year—Prince of Walnut	8 00
W. D. Phelps	Westerville, O.	2d Best.... Teddy of Walnut	5 00
W. D. Phelps	Westerville, O.	Best Cow 3 Years or Over—Princess Carrie	15 00
W. D. Phelps	Westerville, O.	2d Best.... Mary Carithers	10 00
W. D. Phelps	Westerville, O.	2d Best Cow or Heifer 2 Years and Under 3—Blendon Pride	10 00
W. D. Phelps	Westerville, O.	Best Heifer 1 Year and Under 2—Agnes May	10 00
W. D. Phelps	Westerville, O.	2d Best.... Mildred's Queen	7 00
W. D. Phelps	Westerville, O.	Best Heifer Under 1 Year—Ada May	8 00
W. D. Phelps	Westerville, O.	2d Best.... Lulu B.	5 00
W. D. Phelps	Westerville, O.	3d Best.... Maggie Belle	3 00
W. D. Phelps	Westerville, O.	Best Exhibitor's Herd	25 00
W. D. Phelps	Westerville, O.	Best Breeder's Young Herd	25 00
W. D. Phelps	Westerville, O.	Best Get of Sire	15 00
W. D. Phelps	Westerville, O.	Best Produce of Cow	15 00

DEVONS.

Name of Owner.	Postoffice.	Awards.	Amount.
U. B. Moyer	Mt. Cory, O.	Best Bull 3 Years or Over—Charming Lad	$15 00
J. Buckingham	Zanesville, O	2d Best Bert B.	10 00
U. B. Moyer	Mt. Cory, O.	Best Bull 2 Years and Under 3—Russell C.	15 00
J. Buckingham	Zanesville, O	Best Bull 1 Year and Under 2—Fox	10 00
U. B. Moyer	Mt. Cory, O.	2d Best Billy M.	7 00
J. Buckingham	Zanesville, O	3d Best Frost	4 00
U. B. Moyer	Mt. Cory, O.	Best Bull Under 1 Year—Rambler	8 00
J. Buckingham	Zanesville, O	2d Best Fergus	5 00
J. Buckingham	Zanesville, O	Best Cow 3 Years or Over—Red Brush	15 00
U. B. Moyer	Mt. Cory, O.	2d Best Bright Promise	10 00
J. Buckingham	Zanesville, O	3d Best Granville	5 00
J. Buckingham	Zanesville, O	Best Cow or Heifer 2 Years and Under 3—Queen Caselle 2d	15 00
U. B. Moyer	Mt. Cory, O.	2d Best Bell M.	10 00
U. B. Moyer	Mt. Cory, O.	3d Best Red Silk	5 00
U. B. Moyer	Mt. Cory, O.	Best Heifer 1 Year and Under 2—Christina M.	10 00
J. Buckingham	Zanesville, O	2d Best Dorus	7 00
U. B. Moyer	Mt. Cory, O.	Best Heifer Under 1 Year	8 00
J. Buckingham	Zanesville, O	2d Best Fluff	5 00
J. Buckingham	Zanesville, O	3d Best Gayety	3 00
U. B. Moyer	Mt. Cory, O.	Best Exhibitor's Herd	25 00
J. Buckingham	Zanesville, O	2d Best	15 00
U. B. Moyer	Mt. Cory, O.	Best Get of Sire	15 00
J. Buckingham	Zanesville, O	2d Best	10 00
U. B. Moyer	Mt. Cory, O.	Best Produce of Cow	15 00
U. B. Moyer	Mt. Cory, O.	2d Best	10 00
U. B. Moyer	Mt. Cory, O.	3d Best	5 00

FAT CATTLE.

Name of Owner.	Postoffice.	Awards.	Amount.
Carpenter & Ross	Mansfield, O.	Best Steer or Spayed Heifer 2 Years and Under 3—Masterpiece	$25 00
N. S. McKay & Son	Xenia, O.	Best Steer or Spayed Heifer 1 Year and Under 2	25 00
Carpenter & Ross	Mansfield, O.	2d Best Roan	15 00
J. Frantz & Son	Bluffton, O.	3d Best Cap Henry	10 00
H. M. Brown	Hillsboro, O.	Best Steer or Spayed Heifer Under 1 Year	25 00
Carpenter & Ross	Mansfield, O.	2d Best	15 00

THIRD DEPARTMENT—SWINE.

H. M. BROWN, Member in Charge.

BERKSHIRES.

Name of Owner.	Postoffice.	Awards.	Amount.
D. A. Peterson	Spring Valley, O.	Best Boar 2 Years or Over	$15 00
J. L. Axline	Pataskala, O.	2d Best	10 00
Aldora Farm	Rosston, Pa.	Best Boar 1 Year and Under 2	15 00
Aldora Farm	Rosston, Pa.	2d Best	10 00
D. A. Peterson	Spring Valley, O.	3d Best	5 00
Aldora Farm	Rosston, Pa.	Best Boar 6 Months and Under 1 Year	10 00
J. L. Axline	Pataskala, O.	2d Best	7 00
D. A. Peterson	Spring Valley, O.	3d Best	4 00
Aldora Farm	Rosston, Pa.	Best Boar Under 6 Months	10 00
J. L. Axline	Pataskala, O.	2d Best	7 00
D. A. Peterson	Spring Valley, O.	3d Best	4 00
J. L. Axline	Pataskala, O.	Best Sow 2 Years or Over	15 00
D. A. Peterson	Spring Valley, O.	2d Best	10 00
D. A. Peterson	Spring Valley, O.	3d Best	5 00
Aldora Farm	Rosston, Pa.	Best Sow 1 Year and Under 2	15 00
Aldora Farm	Rosston, Pa.	2d Best	10 00
Aldora Farm	Rosston, Pa.	3d Best	5 00
Aldora Farm	Rosston, Pa.	Best Sow 6 Months and Under 1 Year	10 00
Aldora Farm	Rosston, Pa.	2d Best	7 00
Aldora Farm	Rosston, Pa.	3d Best	4 00
Aldora Farm	Rosston, Pa.	Best Sow Under 6 Months	10 00
Aldora Farm	Rosston, Pa.	2d Best	7 00
J. L. Axline	Pataskala, O.	3d Best	4 00
		(Breeders' Rings.)	
Aldora Farm	Rosston, Pa.	Best Four Swine the Get of One Boar	20 00
D. A. Peterson	Spring Valley, O.	2d Best	10 00
J. L. Axline	Pataskala, O.	3d Best	5 00
Aldora Farm	Rosston, Pa.	Best Four Pigs the Produce of One Sow	20 00
J. L. Axline	Pataskala, O.	2d Best	10 00
D. A. Peterson	Spring Valley, O.	3d Best	5 00
Aldora Farm	Rosston, Pa.	Best Boar and Three Sows Over 1 Year	20 00
D. A. Peterson	Spring Valley, O.	2d Best	12 00
J. L. Axline	Pataskala, O.	3d Best	7 00
D. A. Peterson	Spring Valley, O.	Best Boar and Three Sows Under 1 Year	20 00
J. L. Axline	Pataskala, O.	2d Best	12 00
		Champions.	
Aldora Farm	Rosston, Pa.	Champion Boar Any Age	20 00
Aldora Farm	Rosston, Pa.	Champion Sow Any Age	20 00

POLAND-CHINAS.

Name of Owner.	Postoffice.	Awards.	Amount.
A. C. Grieve & Sons	Xenia, O.	Best Boar 2 Years or Over	$15 00
Fernow Bros	Leesburg, O.	2d Best	10 00
Williams Bros.	Degraff, O.	3d Best	5 00
Spurling Bros	Pleasant Plain, O.	Best Boar 1 Year and Under 2	15 00
W. D. Calland & Son	Degraff, O.	2d Best	10 00
Ed. Klever	Bloomingburg, O.	3d Best	5 00
J. W. Townsley	Washington C.H., O	Best Boar 6 Months and Under 1 Year	10 00
J. A. Stalter	Pataskala, O.	2d Best	7 00
Thos. Hunter & Co.	Morrow, O.	3d Best	4 00
Thos. Hunter & Co.	Morrow, O.	Best Boar Under 6 Months	10 00
Ed. Klever	Bloomingburg, O.	2d Best	7 00
J. A. Stalter	Pataskala, O.	3d Best	4 00
Ed. Klever	Bloomingburg, O.	Best Sow 2 Years or Over	15 00
L. C. McLaughlin	Pleasantville, O., R. R. 2.	2d Best	10 00
C. M. Beatty	Orient, O.	3d Best	5 00
Chas. E. Keller	Newark, O.	Best Sow 1 Year and Under 2	15 00
Ed. Klever	Bloomingburg, O.	2d Best	10 00
Ed. Klever	Bloomingburg, O.	3d Best	5 00

POLAND-CHINAS—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
Thos. Hunter & Co.	Morrow, O.	Best Sow 6 Months and Under 1 Year	$10 00
Ed. Klever	Bloomingburg, O.	2d Best	7 00
J. A. Stalter	Pataskala, O.	3d Best	4 00
Max Blue	Amanda, O.	Best Sow Under 6 Months	10 00
M. C. Brown	Martinsville, O.	2d Best	7 00
Ed. Klever	Bloomingburg, O.	3d Best	4 00
		Breeders' Rings.	
Ed. Klever	Bloomingburg, O.	Best Four Swine the Get of One Boar	20 00
Thos. Hunter & Co.	Morrow, O.	2d Best	10 00
J. A. Stalter	Pataskala, O.	3d Best	5 00
Thos. Hunter & Co.	Morrow, O.	Best Four Pigs the Produce of One Sow	20 00
J. A. Stalter	Pataskala, O.	2d Best	10 00
Ed. Klever	Bloomingburg, O.	3d Best	5 00
Ed. Klever	Bloomingburg, O.	Best Boar and Three Sows Over 1 Year	20 00
A. C. Grieve & Sons	Xenia, O.	2d Best	12 00
C. M. Beatty	Orient, O.	3d Best	7 00
Thos. Hunter & Co.	Morrow, O.	Best Boar and Three Sows Under 1 Year	20 00
J. A. Stalter	Pataskala, O.	2d Best	12 00
Ed. Klever	Bloomingburg, O.	3d Best	7 00
		Champions.	
Spurling Bros.	Pleasant Plain, O.	Champion Boar Any Age	20 00
Chas. E. Keller	Newark, O.	Champion Sow Any Age	20 00

CHESTER WHITES.

Name of Owner.	Postoffice.	Awards.	Amount.
Wm. T. Dever	Lucasville, O.	Best Boar 2 Years or Over	$15 00
C. Hintz & Sons	Fremont, O.	2d Best	10 00
J. L. Beringer	Marion, O.	3d Best	5 00
J. W. L. Motherspaw & Son	Newark, O.	Best Boar 1 Year and Under 2	15 00
C. Hintz & Sons	Fremont, O.	2d Best	10 00
W. T. Dever	Lucasville, O.	3d Best	5 00
J. W. L. Motherspaw & Son	Newark, O.	Best Boar 6 Months and Under 1 Year	10 00
W. T. Dever	Lucasville, O.	2d Best	7 00
W. T. Dever	Lucasville, O.	3d Best	4 00
J. W. L. Motherspaw & Son	Newark, O.	Best Boar Under 6 Months	10 00
J. W. L. Motherspaw & Son	Newark, O.	2d Best	7 00
H. Brantigan & Sons	Sidney, O.	3d Best	4 00
W. T. Dever	Lucasville, O.	Best Sow 2 Years or Over	15 00
W. T. Dever	Lucasville, O.	2d Best	10 00
C. Hintz & Sons	Fremont, O.	3d Best	5 00
J. W. L. Motherspaw & Son	Newark, O.	Best Sow 1 Year and Under 2	15 00
J. W. L. Motherspaw & Son	Newark, O.	2d Best	10 00
H. Brantigan & Sons	Sidney, O.	3d Best	5 00
J. W. L. Motherspaw & Son	Newark, O.	Best Sow 6 Months and Under 1 Year	10 00
J. W. L. Motherspaw & Son	Newark, O.	2d Best	7 00
Henry Thibaut	Marion, O.	3d Best	4 00
J. W. L. Motherspaw & Son	Newark, O.	Best Sow Under 6 Months	10 00
J. W. L. Motherspaw & Son	Newark, O.	2d Best	7 00
J. W. L. Motherspaw & Son	Newark, O.	3d Best	4 00
		Breeders' Rings.	
J. W. L. Motherspaw & Son	Newark, O.	Best Four Swine the Get of One Boar	20 00
C. Hintz & Sons	Fremont, O.	2d Best	10 00
Wm. T. Dever	Lucasville, O.	3d Best	5 00
J. W. L. Motherspaw & Son	Newark, O.	Best Four Pigs the Produce of One Sow	20 00
Wm. T. Dever	Lucasville, O.	2d Best	10 00
C. Hintz & Sons	Fremont, O.	3d Best	5 00
Wm. T. Dever	Lucasville, O.	Best Boar and Three Sows Over 1 Year	20 00
C. Hintz & Sons	Fremont, O.	2d Best	12 00
H. Brantigan & Sons	Sidney, O.	3d Best	7 00
J. W. L. Motherspaw & Son	Newark, O.	Best Boar and Three Sows Under 1 Year	20 00
C. Hintz & Sons	Fremont, O.	2d Best	12 00
Wm. T. Dever	Lucasville, O.	3d Best	7 00
		Champions.	
J. W. L. Motherspaw & Son	Newark, O.	Champion Boar Any Age	20 00
J. W. L. Motherspaw & Son	Newark, O.	Champion Sow Any Age	20 00

DUROC JERSEYS.

Name of Owner.	Postoffice.	Awards.	Amount.
Mahan Bros.	Osborn, O.	Best Boar 2 Years or Over	$15 00
W. E. Patterson	Fayette, O.	2d Best	10 00
J. D. Nidlinger & Son	Decatur, Ind.	3d Best	5 00
Glenn Hire Brock	Jeffersonville, O.	Best Boar 1 Year and Under 2	15 00
J. D. Nidlinger & Son	Decatur, Ind.	2d Best	10 00
C. J. McLaughlin	Pleasantville, O.	3d Best	5 00
J. D. Nidlinger & Son	Decatur, Ind.	Best Boar 6 Months and Under 1 Year	10 00
Watt & Foust	Cedarville, O.	2d Best	7 00
H. C. Thomsen & Sons	Fremont, O.	3d Best	4 00
Mahon Bros.	Osborn, O.	Best Boar Under 6 Months	10 00
C. J. McLaughlin	Pleasantville, O.	2d Best	7 00
Mahan Bros	Osborn, O.	3d Best	4 00
Watt & Foust	Cedarville, O.	Best Sow 2 Years or Over	15 00
Mahan Bros	Osborn, O.	2d Best	10 00
Glenn Hire Brock	Jeffersonville, O.	3d Best	5 00
Mahan Bros.	Osborn, O.	Best Sow 1 Year and Under 2	15 00
Watt & Foust	Cedarville, O.	2d Best	10 00
Glenn Hire Brock	Jeffersonville, O.	3d Best	5 00
Glenn Hire Brock	Jeffersonville, O.	Best Sow 6 Months and Under 1 Year	10 00
J. D. Nidlinger	Decatur, Ind.	2d Best	7 00
Watt & Foust	Cedarville, O.	3d Best	4 00
Mahan Bros.	Osborn, O.	Best Sow Under 6 Months	10 00
H. C. Thomsen & Sons	Fremont, O.	2d Best	7 00
C. J. McLaughlin	Pleasantville, O.	3d Best	4 00
		Breeders' Rings.	
Glenn Hire Brock	Jeffersonville, O.	Best Four Swine the Get of One Boar	20 00
Watt & Foust	Cedarville, O.	2d Best	10 00
Mahan Bros.	Osborn, O.	3d Best	5 00
Watt & Foust	Cedarville, O.	Best Four Pigs the Produce of One Sow	20 00
Mahan Bros.	Osborn, O.	2d Best	10 00
Glenn Hire Brock	Jeffersonville, O.	3d Best	5 00
Mahan Bros.	Osborn, O.	Best Boar and Three Sows Over 1 Year	20 00
Glenn Hire Brock	Jeffersonville, O.	2d Best	12 00
Watt & Foust	Cedarville, O.	3d Best	7 00
Watt & Foust	Cedarville, O.	Best Boar and Three Sows Under 1 Year	20 00
Mahan Bros.	Osborn, O.	2d Best	12 00
J. D. Nidlinger	Decatur, Ind.	3d Best	7 00
		Champions.	
Glenn Hire Brock	Jeffersonville, O.	Champion Boar Any Age	20 00
Watt & Foust	Cedarville, O.	Champion Sow Any Age	20 00

YORKSHIRES.

Name of Owner.	Postoffice.	Awards.	Amount.
C. W. Hintz	Spencer, O.	Best Boar 2 Years or Over	$10 00
Aldora Farm	Rosston, Pa.	2d Best	5 00
Aldora Farm	Rosston, Pa.	Best Boar 1 Year and Under 2	10 00
H. C. Diamond	New Moorefield, O	2d Best	5 00
C. W. Hintz	Spencer, O.	Best Boar 6 Months and Under 1 Year	8 00
Aldora Farm	Rosston, Pa.	2d Best	4 00
Aldora Farm	Rosston, Pa.	Best Boar Under 6 Months	5 00
C. W. Hintz	Spencer, O.	2d Best	3 00
C. W. Hintz	Spencer, O.	Best Sow 2 Years or Over	10 00
Aldora Farm	Rosston, Pa.	2d Best	5 00
C. W. Hintz	Spencer, O.	Best Sow 1 Year and Under 2	10 00
C. W. Hintz	Spencer, O.	2d Best	5 00
C. W. Hintz	Spencer, O.	Best Sow 6 Months and Under 1 Year	8 00
Aldora Farm	Rosston, Pa.	2d Best	4 00
Aldora Farm	Rosston, Pa	Best Sow Under 6 Months	5 00
Aldora Farm	Rosston, Pa.	2d Best	3 00
		Breeders' Rings.	
C. W. Hintz	Spencer, O.	Best Four Swine the Get of One Boar	12 00
F. L. Postle	Camp Chase, O.	2d Best	6 00
C. W. Hintz	Spencer, O.	Best Four Swine the Produce of One Sow	12 00
F. L. Postle	Camp Chase, O.	2d Best	6 00
C. W. Hintz	Spencer, O.	Best Boar and Three Sows all Over 1 Year	12 00
Aldora Farm	Rosston, Pa	2d Best	6 00
Aldora Farm	Rosston, Pa.	Best Boar and Three Sows all Under 1 Year	12 00
C. W. Hintz	Spencer, O.	2d Best	6 00

HAMPSHIRES.

Name of Owner.	Postoffice.	Awards.	Amount
E. C. Stone	Armstrong, Ill.	Best Boar 2 Years or Over	$10 00
G. H. Dodds	Hepburn, O.	2d Best	5 00
Hughes Atkinson	Mt. Sterling, Ky.	Best Boar 1 Year and Under 2	10 00
E. C. Stone	Armstrong, Ill.	2d Best	5 00
G. H. Dodds	Hepburn, O.	Best Boar 6 Months and Under 1 Year	8 00
G. H. Dodds	Hepburn, O.	2d Best	4 00
E. C. Stone	Armstrong, Ill.	Best Boar Under 6 Months	5 00
G. H. Dodds	Hepburn, O.	2d Best	3 00
Hughes Atkinson	Mt. Sterling, Ky.	Best Sow 2 Years or Over	10 00
G. H. Dodds	Hepburn, O.	2d Best	5 00
Hughes Atkinson	Mt. Sterling, Ky.	Best Sow 1 Year and Under 2	10 00
Hughes Atkinson	Mt. Sterling, Ky.	2d Best	5 00
Hughes Atkinson	Mt. Sterling, Ky.	Best Sow 6 Months and Under 1 Year	8 00
G. H. Dodds	Hepburn, O.	2d Best	4 00
Hughes Atkinson	Mt. Sterling, Ky.	Best Sow Under 6 Months	5 00
E. C. Stone	Armstrong, Ill.	2d Best	3 00
		Breeders' Rings.	
Hughes Atkinson	Mt. Sterling, Ky.	Best Four Swine the Get of One Boar	12 00
Hughes Atkinson	Mt. Sterling, Ky.	2d Best	6 00
Hughes Atkinson	Mt. Sterling, Ky.	Best Four Swine the Produce of One Sow	12 00
G. H. Dodds	Hepburn, O.	2d Best	6 00
Hughes Atkinson	Mt. Sterling, Ky.	Best Boar and Three Sows All Over One Year	12 00
E. C. Stone	Armstrong, Ill.	2d Best	6 00
Hughes Atkinson	Mt. Sterling, Ky.	Best Boar and Three Sows All Under 1 Year	12 00
G. H. Dodds	Hepburn, O.	2d Best	6 00

TAMWORTHS.

Name of Owner.	Postoffice.	Awards.	Amount.
Jas. P. McCollom	Ferris, Ill., R. R. 1	Best Boar 2 Years or Over	$10 00
Jas. P. McCollom	Ferris, Ill., R. R. 1	Best Boar 1 Year and Under 2	10 00
Jas. P. McCollom	Ferris, Ill., R. R. 1	Best Boar 6 Months and Under 1 Year	8 00
Jas. P. McCollom	Ferris, Ill., R. R. 1	2d Best	4 00
Jas. P. McCollom	Ferris, Ill., R. R. 1	Best Boar Under 6 Months	5 00
Jas. P. McCollom	Ferris, Ill., R. R. 1	2d Best	3 00
Jas. P. McCollom	Ferris, Ill., R. R. 1	Best Sow 2 Years or Over	10 00
Jas. P. McCollom	Ferris, Ill., R. R. 1	2d Best	5 00
Jas. P. McCollom	Ferris, Ill., R. R. 1	Best Sow 1 Year and Under 2	10 00
Jas. P. McCollom	Ferris, Ill., R. R. 1	2d Best	5 00
Jas. P. McCollom	Ferris, Ill., R. R. 1	Best Sow 6 Months and Under 1 Year	8 00
Jas. P. McCollom	Ferris, Ill., R. R. 1	Best Sow Under 6 Months	5 00
Jas. P. McCollom	Ferris, Ill., R. R. 1	2d Best	3 00
		Breeders' Rings.	
Jas. P. McCollom	Ferris, Ill., R. R. 1	Best Four Swine the Get of One Boar	12 00
Jas. P. McCollom	Ferris, Ill., R. R. 1	2d Best	6 00
Jas. P. McCollom	Ferris, Ill., R. R. 1	Best Four Swine the Produce of One Sow	12 00
Jas. P. McCollom	Ferris, Ill., R. R. 1	2d Best	6 00
Jas. P. McCollam	Ferris, Ill., R. R. 1	Best Boar and Three Sows All Over 1 Year	12 00
Jas. P. McCollom	Ferris, Ill., R. R. 1	2d Best	6 00
Jas. P. McCollom	Ferris, Ill., R. R. 1	Best Boar and Three Sows All Under 1 Year	12 00
Jas. P. McCollom	Ferris, Ill., R. R. 1	2d Best	6 00

FOURTH DEPARTMENT—SHEEP.

C. W. McFARLAND, Member in Charge.

MERINOS—CLASS A.

Name of Owner.	Postoffice.	Awards.	Amount.
Quinn & Fawcett	Roxbury and Chesterhill, O.	Best Ram 2 Years or Over—Premises Son	$15 00
David K. Bell	Rochester, N. Y., R. R. 6	2d Best	8 00
A. H. Dean & Son	W. Mansfield, O.	3d Best	5 00
David K. Bell	Rochester, N. Y.	Best Ram 1 Year and Under 2	12 00
David K. Bell	Rochester, N. Y.	2d Best	7 00
A. H. Dean & Son	W. Mansfield, O.	3d Best	4 00
R. D. Williamson	Xenia, O.	Best Ram Under 1 Year	10 00
R. D. McGonigle & Son	Ashley, O.	2d Best	5 00
A. T. Gamber	Wakeman, O.	3d Best	3 00
S. Blamer & Son	Johnstown, O.	Best Ewe 2 Years or Over	15 00
J. Lovett & Son	Quincy, O.	2d Best	8 00
R. D. McGonigle & Son	Ashley, O.	3d Best	5 00
David K. Bell	Rochester, N. Y.	Best Ewe 1 Year and Under 2	12 00
R. D. McGonigle & Son	Ashley, O.	2d Best	7 00
Sheets & Wallace	Sunbury, O.	3d Best	4 00
R. D. Williamson	Xenia, O.	Best Ewe Under 1 Year	10 00
S. Blamer & Son	Johnstown	2d Best	5 00
A. H. Dean & Son	W. Mansfield	3d Best	3 00
David K. Bell	Rochester, N. Y.	Best Exhibitor's Flock	15 00
David K. Bell	Rochester, N. Y.	2d Best	10 00
R. D. McGonigle & Son	Ashley, O.	3d Best	5 00
David K. Bell	Rochester, N. Y.	Best Breeder's Young Flock	15 00
David K. Bell	Rochester, N. Y.	2d Best	10 00
C. H. Bell	Ashley, O.	3d Best	5 00
David K. Bell	Rochester, N. Y.	Best Get of Sire	12 00
A. H. Dean & Son	W. Mansfield, O.	2d Best	6 00
C. H. Bell	Ashley, O.	3d Best	3 00
R. D. Williamson	Xenia, O.	Champion Ram any age	15 00
S. Blamer & Son	Johnstown, O.	Champion Ewe any age	15 00

MERINOS—CLASS B.

Name of Owner.	Postoffice.	Awards.	Amount.
S. Blamer & Son	Johnstown, O.	Best Ram 2 Years or Over	$15 00
Sheets & Wallace	Sunbury, O.	2d Best	8 00
J. Lovett & Son	Quincy, O.	3d Best	5 00
A. T. Gamber	Wakeman, O.	Best Ram 1 Year and Under 2	12 00
R. D. Williamson	Xenia, O.	2d Best	7 00
A. T. Gamber	Wakeman, O.	3d Best	4 00
A. T. Gamber	Wakeman, O.	Best Ram Under 1 Year	10 00
A. T. Gamber	Wakeman, O.	2d Best	5 00
A. H. Dean & Son	W. Mansfield, O.	3d Best	3 00
J. W. Robertson	Cadiz, O.	Best Ewe 2 Years or over—Model B-975	15 00
C. H. Bell	Ashley, O.	2d Best	8 00
S. Blamer & Son	Johnstown, O.	3d Best	5 00
A. T. Gamber	Wakeman, O.	Best Ewe 1 Year and Under 2	12 00
Quinn & Fawcett	Chesterhill, O.	2d Best	7 00
R. D. McGonigle & Son	Ashley, O.	3d Best	4 00
A. T. Gamber	Wakeman, O.	Best Ewe Under 1 Year	10 00
R. D. Williamson	Xenia, O.	2d Best	5 00
A. T. Gamber	Wakeman, O.	3d Best	3 00
A. T. Gamber	Wakeman, O.	Best Exhibitor's Flock	15 00
S. Blamer & Son	Johnstown, O.	2d Best	10 00
R. D. Williamson	Xenia, O.	3d Best	5 00
A. T. Gamber	Wakeman, O.	Best Breeder's Young Flock	15 00
C. H. Bell	Ashley, O.	2d Best	10 00
A. T. Gamber	Wakeman, O.	Best Get of Sire	12 00
C. H. Bell	Ashley, O.	2d Best	6 00
S. Blamer & Son	Johnstown, O.	Champion Ram any age	15 00
J. W. Robertson	Cadiz, O.	Champion Ewe any age	15 00

MERINOS—CLASS C.

Name of Owner.	Postoffice.	Awards.	Amount.
C. L. Freed	Lancaster, O.	Best Ram 2 Years or Over	$15 00
S. Blamer & Son	Johnstown, O.	2d Best	8 00
J. W. Robertson	Cadiz, O., R. R. 2	3d Best	5 00
A. T. Gamber	Wakeman, O.	Best Ram 1 Year and Under 2	12 00
C. H. Bell	Ashley, O.	2d Best	7 00
S. Blamer & Son	Johnstown, O.	3d Best	4 00
C. H. Bell	Ashley, O.	Best Ram Under 1 Year	10 00
A. T. Gamber	Wakeman, O.	2d Best	5 00
F. H. Russell	Wakeman, O.	3d Best	3 00
S. Blamer & Son	Johnstown, O.	Best Ewe 2 Years or Over	15 00
J. M. Wilson	Fredericktown, O.	2d Best	8 00
J. M. Wilson	Fredericktown, O.	3d Best	5 00
A. T. Gamber	Wakeman, O.	Best Ewe 1 Year and Under 2	12 00
S. Blamer & Son	Johnstown, O.	2d Best	7 00
C. L. Freed	Lancaster, O.	3d Best	4 00
A. T. Gamber	Wakeman, O.	Best Ewe Under 1 Year	10 00
S. Blamer & Son	Johnstown, O.	2d Best	5 00
Sheets & Wallace	Sunbury, O.	3d Best	3 00
A. T. Gamber	Wakeman, O.	Best Exhibitor's Flock	15 00
S. Blamer & Son	Johnstown, O.	2d Best	10 00
C. H. Bell	Ashley, O.	3d Best	5 00
A. T. Gamber	Wakeman, O.	Best Breeder's Young Flock	15 00
C. H. Bell	Ashley, O.	2d Best	10 00
F. H. Russell	Wakeman, O.	3d Best	5 00
A. T. Gamber	Wakeman, O.	Best Get of Sire	12 00
F. H. Russell	Wakeman, O.	2d Best	6 00
C. H. Bell	Ashley, O.	3d Best	3 00
A. T. Gamber	Wakeman, O.	Champion Ram any age	15 00
S. Blamer & Son	Johnstown, O.	Champion Ewe any age	15 00

FRENCH MERINOS—RAMBOUILLET.

Name of Owner.	Postoffice.	Awards.	Amount.
Max Chapman	Marysville, O.	Best Ram 2 Years or Over—D. S. Wise No 17	$15 00
Orth & Mathews	Ada, O.	2d Best—B. F. Harris, 928, 35804-A R. R. Vol. 8	8 00
Lincoln Bros	Milford Center, O.	3d Best	5 00
Lincoln Bros	Milford Center, O.	Best Ram 1 Year and Under 2	12 00
L. W. Shaw	Pottersburg, O.	2d Best	7 00
J. H. McMullan	Woodstock, O.	3d Best	4 00
L. W. Shaw	Pottersburg, O.	Best Ram Under 1 Year	10 00
L. W. Shaw	Pottersburg, O.	2d Best	5 00
Max Chapman	Marysville, O.	3d Best—Max Chapman, No. 261	3 00
Max Chapman	Marysville, O.	Best Ewe 2 Years or Over—Max Chapman, No. 200	$15 00
L. W. Shaw	Pottersburg, O.	2d Best	8 00
L. W. Shaw	Pottersburg, O.	3d Best	5 00
P. A. Riegle	Arlington, O.	Best Ewe 1 Year and Under 2—P. A. R. R. 323–375a—A. R. R. Vol. 8	12 00
L. W. Shaw	Pottersburg, O.	2d Best	7 00
Max Chapman	Marysville, O.	3d Best—Max Chapman, No. 229	4 00
Lincoln Bros	Milford Center, O.	Best Ewe Under 1 Year	10 00
L. W. Shaw	Pottersburg, O.	2d Best	5 00
Max Chapman	Marysville, O.	3d Best	3 00
Max Chapman	Marysville, O.	Best Exhibitor's Flock	15 00
L. W. Shaw	Pottersburg, O.	2d Best	10 00
J. H. McMullan	Woodstock, O.	3d Best	5 00
L. W. Shaw	Pottersburg, O.	Best Breeder's Young Flock	15 00
Lincoln Bros	Milford Center, O.	2d Best	10 00
Max Chapman	Marysville, O.	3d Best	5 00
L. W. Shaw	Pottersburg, O.	Best Get of Sire	12 00
Lincoln Bros	MilfordCenter, O.	2d Best	6 00
Max Chapman	Marysville, O.	3d Best	3 00
Lincoln Bros	Milford Center, O.	Champion Ram any age	15 00
Max Chapman	Marysville, O.	Champion Ewe any age	15 00

COTSWOLDS.

Name of Owner.	Postoffice.	Awards.	Amount.
D. B. Watt & Son	Xenia, O.	Best Ram 2 Years or Over	$15 00
Wilson Bros	Muncie, Ind.	2d Best	8 00
Wilson Bros	Muncie, Ind.	3d Best	5 00

COTSWOLDS—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
Wilson Bros	Muncie, Ind	Best Ram 1 Year and Under 2	$12 00
D. B. Watt & Son	Xenia, O	2d Best	7 00
Wilson Bros	Muncie, Ind	3d Best	4 00
D. B. Watt & Son	Xenia, O	Best Ram Under 1 Year	10 00
D. B. Watt & Son	Xenia, O	2d Best	5 00
Wilson Bros	Muncie, Ind	3d Best	3 00
Wilson Bros	Muncie, Ind	Best Ewe 2 Years or Over	15 00
D. B. Watt & Son	Xenia, O	2d Best	8 00
Wilson Bros	Muncie, Ind	3d Best	5 00
D. B. Watt & Son	Xenia, O	Best Ewe 1 Year and Under 2	12 00
Wilson Bros	Muncie, Ind	2d Best	7 00
D. B. Watt & Son	Xenia, O	3d Best	4 00
D. B. Watt & Son	Xenia, O	Best Ewe Under 1 Year	10 00
Wilson Bros	Muncie, Ind	2d Best	5 00
Wilson Bros	Muncie, Ind	3d Best	3 00
D. B. Watt & Son	Xenia, O	Best Exhibitor's Flock	15 00
Wilson Bros	Muncie, Ind	2d Best	10 00
D. B. Watt & Son	Xenia, O	Best Breeder's Young Flock	15 00
Wilson Bros	Muncie, Ind	2d Best	10 00
D. B. Watt & Son	Xenia, O	Best Get of Sire	12 00
Wilson Bros	Muncie, Ind	2d Best	6 00
Wilson Bros	Muncie, Ind	Champion Ram any age	15 00
D. B. Watt & Son	Xenia, O	Champion Ewe any age	15 00

OXFORD DOWNS.

Name of Owner	Postoffice.	Awards.	Amount.
J. C. Williamson & Sons	Xenia, O	Best Ram 2 Years or Over	$15 00
J. C. Williamson & Sons	Xenia, O	2d Best	8 00
G. W. Heskett Jr	Fulton, O	3d Best	5 00
J. C. Williamson & Sons	Xenia, O	Best Ram 1 Year and Under 2	12 00
G. W. Heskett, Jr	Fulton, O	2d Best	7 00
J. C. Williamson & Sons	Xenia, O	3d Best	4 00
G. W. Heskett, Jr	Fulton, O	Best Ram Under 1 Year	10 00
J. C. Williamson & Sons	Xenia, O	2d Best	5 00
G. W. Heskett, Jr	Fulton, O	3d Best	3 00
J. C. Williamson & Sons	Xenia, O	Best Ewe 2 Years or Over	15 00
G W. Heskett, Jr	Fulton, O	2d Best	8 00
J. C. Williamson & Sons	Xenia, O	3d Best	5 00
J. C. Williamson & Sons	Xenia, O	Best Ewe 1 Year and Under 2	12 00
G W. Heskett, Jr	Fulton, O	2d Best	7 00
J. C. Williamson & Sons	Xenia, O	3d Best	4 00
J. C. Williamson & Sons	Xenia, O	Best Ewe Under 1 Year	10 00
G. W. Heskett, Jr	Fulton, O	2d Best	5 00
G. W. Heskett, Jr	Fulton, O	3d Best	3 00
J. C Williamson & Sons	Xenia, O	Best Exhibitor's Flock	15 00
G. W Heskett, Jr	Fulton, O	2d Best	10 00
J. C. Williamson & Sons	Xenia, O	3d Best	5 00
G. W. Heskett, Jr	Fulton, O	Best Breeder's Young Flock	15 00
J. C. Williamson & Sons	Xenia, O	2d Best	10 00
J. C. Williamson & Sons	Xenia, O	Best Get of Sire	12 00
G W. Heskett, Jr	Fulton, O	2d Best	6 00
J. C. Williamson & Sons	Xenia, O	Champion Ram any age	15 00
J. C. Williamson & Sons	Xenia, O	Champion Ewe any age	15 00

SHROPSHIRE DOWNS.

Name of Owner.	Postoffice.	Awards.	Amount.
G. Howard Davison	Millbrook, N. Y.	Best Ram 2 Years or Over	$15 00
S. O. Taylor & Son	Zanesfield, O	2d Best	8 00
L. H. Rose	Bucyrus, O	3d Best—Davison's 25-05015	5 00
G. Howard Davison	Millbrook, N. Y.	Best Ram 1 Year and Under 2	12 00
G. Howard Davison	Millbrook, N. Y.	2d Best	7 00
C. O. Judd	Kent, O	3d Best	4 00
G. Howard Davison	Millbrook, N. Y.	Best Ram Under 1 Year	10 00
G. Howard Davison	Millbrook, N. Y.	2d Best	5 00
G. Howard Davison	Millbrook, N. Y.	3d Best	3 00
G. Howard Davison	Millbrook, N. Y.	Best Ewe 2 Years or Over	15 00
G. Howard Davison	Millbrook, N. Y.	2d Best	8 00
L. H. Ross	Bucyrus, O	3d Best—Ross-217904	5 00

SHROPSHIRE DOWNS—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
G. Howard Davison	Millbrook, N. Y.	Best Ewe 1 Year and Under 2	$12 00
G. Howard Davison	Millbrook, N. Y.	2d Best	7 00
H. M. Brown	Hillsboro, O.	3d Best	4 00
G. Howard Davison	Millbrook, N. Y.	Best Ewe Under 1 Year	10 00
G. Howard Davison	Millbrook, N. Y.	2d Best	5 00
L. H. Ross	Bucyrus, O.	3d Best—1093	3 00
G. Howard Davison	Millbrook, N. Y.	Best Exhibitor's Flock	15 00
G. Howard Davison	Millbrook, N. Y.	2d Best	10 00
S. O. Taylor & Son	Zanesfield, O.	3d Best	5 00
G. Howard Davison	Millbrook, N. Y.	Best Breeder's Young Flock	15 00
H. M. Brown	Hillsboro, O.	2d Best	10 00
G. Howard Davison	Millbrook, N. Y.	Best Get of Sire	12 00
H. M. Brown	Hillsboro, O.	2d Best	6 00
G. Howard Davison	Millbrook, N. Y.	Champion Ram any age	15 00
G. Howard Davison	Millbrook, N. Y.	Champion Ewe any age	15 00

HAMPSHIRE DOWNS.

Name of Owner.	Postoffice.	Awards.	Amount.
C. O. Judd	Kent, O.	Best Ram 2 Years or Over	$15 00
P. W. Artz & Son	Osborn, O.	2d Best	8 00
W. J. Cherry	Xenia, O.	3d Best	5 00
W. J. Cherry	Xenia, O.	Best Ram 1 Year and Under 2	12 00
C. O. Judd	Kent, O.	2d Best	7 00
P. W. Artz & Son	Osborn, O.	3d Best	4 00
C. O. Judd	Kent, O.	Best Ram Under 1 Year	10 00
W. J. Cherry	Xenia, O.	2d Best	5 00
P. W. Artz & Son	Osborn, O.	3d Best	3 00
C. O. Judd	Kent, O.	Best Ewe 2 Years or Over	15 00
W. J. Cherry	Xenia, O.	2d Best	8 00
P. W. Artz & Son	Osborn, O.	3d Best	5 00
P. W. Artz & Son	Osborn, O.	Best Ewe 1 Year and Under 2	12 00
C. O. Judd	Kent, O.	2d Best	7 00
W. J. Cherry	Xenia, O.	3d Best	4 00
C. O. Judd	Kent, O.	Best Ewe Under 1 Year	10 00
P. W. Artz & Son	Osborn, O.	2d Best	5 00
W. J. Cherry	Xenia, O.	3d Best	3 00
C. O. Judd	Kent, O.	Best Exhibitor's Flock	15 00
W. J. Cherry	Xenia, O.	2d Best	10 00
P. W. Artz & Son	Osborn, O.	3d Best	5 00
P. W. Artz & Son	Osborn, O.	Best Breeder's Young Flock	15 00
W. J. Cherry	Xenia, O.	2d Best	10 00
P. W. Artz & Son	Osborn, O.	Best Get of Sire	12 00
P. W. Artz & Son	Osborn, O.	2d Best	6 00
W. J. Cherry	Xenia, O.	3d Best	3 00
C. O. Judd	Kent, O.	Champion Ram any age	15 00
C. O. Judd	Kent, O.	Champion Ewe any age	15 00

SOUTH DOWNS.

Name of Owner.	Postoffice.	Awards.	Amount.
Wilson Bros	Muncie, Ind.	Best Ram 2 Years or Over	$15 00
W. H. Compton & Son	Monroe, O.	2d Best	8 00
W. H. Compton & Son	Monroe, O.	3d Best	5 00
Wilson Bros	Muncie, Ind.	Best Ram 1 Year and Under 2	12 00
Wilson Bros	Muncie, Ind.	2d Best	7 00
W. H. Compton & Son	Monroe, O.	3d Best	4 00
William Martin	Muncie, Ind.	Best Ram Under 1 Year	10 00
Wilson Bros	Muncie, Ind.	2d Best	5 00
W. H. Compton & Son	Monroe, O.	3d Best	3 00
A. T. Freed	Lancaster, O.	Best Ewe 2 Years or Over	15 00
Wilson Bros	Muncie, Ind.	2d Best	8 00
W. H. Compton & Son	Monroe, O.	3d Best	5 00
Wilson Bros	Muncie, Ind.	Best Ewe 1 Year and Under 2	12 00
W. H. Compton & Son	Monroe, O.	2d Best	7 00
Wilson Bros	Muncie, Ind.	3d Best	4 00
William Martin	Muncie, Ind.	Best Ewe Under 1 Year	10 00
Wilson Bros	Muncie, Ind.	2d Best	5 00
W. H. Compton & Son	Monroe, O.	3d Best	3 00
Wilson Bros	Muncie, Ind.	Best Exhibitor's Flock	15 00

SOUTH DOWNS—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
W. H. Compton & Son	Monroe, O	2d Best	$10 00
W. H. Compton & Son	Monroe, O	Best Breeder's Young Flock	15 00
William Martin	Muncie. Ind	Best Get of Sire	12 00
W. H. Compton & Son	Monroe, O	2d Best	6 00
Wilson Bros	Muncie, Ind	Champion Ram any age	15 00
Wilson Bros	Muncie, Ind	Champion Ewe any age	15 00

LINCOLNS.

Name of Owner.	Postoffice.	Awards.	Amount.
A. C. Fielder	Degraff, O	Best Ram 2 Years or Over	$15 00
H. M. Brown	Hillsboro, O	2d Best	8 00
H. M. Brown	Hillsboro, O	3d Best	5 00
A. C. Fielder	Degraff, O	Best Ram 1 Year and Under 2	12 00
A. C. Fielder	Degraff, O	2d Best	7 00
J. R. Bickett	Xenia, O	3d Best	4 00
A. C. Fielder	Degraff, O	Best Ram Under 1 Year	10 00
A. C. Fielder	Degraff, O	2d Best	5 00
H. M. Brown	Hillsboro, O	3d Best	3 00
A. C. Fielder	Degraff, O	Best Ewe 2 Years or Over	15 00
A. C. Fielder	Degraff, O	2d Best	8 00
H. M. Brown	Hillsboro, O	3d Best	5 00
J. R. Bickett	Xenia, O	Best Ewe 1 Year and Under 2	12 00
A. C. Fielder	Degraff, O	2d Best	7 00
A. C. Fielder	Degraff, O	3d Best	4 00
A. C. Fielder	Degraff, O	Best Ewe Under 1 Year	10 00
H. M. Brown	Hillsboro, O	2d Best	5 00
H. M. Brown	Hillsboro, O	3d Best	3 00
A. C. Fielder	Degraff, O	Best Exhibitor's Flock	15 00
H. M. Brown	Hillsboro, O	2d Best	10 00
J. R. Bickett	Xenia, O	3d Best	5 00
J. R. Bickett	Xenia, O	Best Breeder's Young Flock	15 00
A. C. Fielder	Degraff, O	Best Get of Sire	12 00
H. M. Brown	Hillsboro, O	2d Best	6 00
J. R. Bickett	Xenia, O	3d Best	3 00
A. C. Fielder	Degraff, O	Champion Ram any age	15 00
J. R. Bickett	Xenia, O	Champion Ewe any age	15 00

DORSETS.

Name of Owner.	Postoffice.	Awards.	Amount.
Fillmore Farms	Bennington, Vt	Best Ram 2 Years or Over—Fillmore's 45—4838	$15 00
John R. Nash	Lipton, Ind	2d Best	8 00
Chas. Leet & Son	Mantua, O	3d Best	5 00
Fillmore Farms	Bennington, Vt	Best Ram 1 Year and Under 2—Fillmore's 172—5802	12 00
H. H. Cherry	Xenia, O	2d Best	7 00
Fillmore Farms	Bennington, Vt	3d Best Fillmore's 77—5249	4 00
Fillmore Farms	Bennington, Vt	Best Ram Under 1 Year—Fillmore's 190—6262	10 00
Fillmore Farms	Bennington, Vt	2d Best Fillmore's 196—6268	5 00
H. H. Cherry	Xenia, O	3d Best	3 00
John R. Nash	Lipton, Ind	Best Ewe 2 Years or Over	15 00
Fillmore Farms	Bennington, Vt	2d Best Fillmore's 123— 5753	8 00
John R. Nash	Lipton, Ind	3d Best	5 00
Fillmore Farms	Bennington, Vt	Best Ewe 1 Year and Under 2	12 00
Chas. Leet & Son	Mantua, O	2d Best	7 00
Fillmore Farms	Bennington, Vt	3d Best Fillmore's 48—5253	4 00
Fillmore Farms	Bennington, Vt	Best Ewe Under 1 Year—Fillmore's 239—6311	10 00
John R. Nash	Lipton, Ind	2d Best	5 00
Fillmore Farms	Bennington, Vt	3d Best Fillmore's 204—6276	3 00
Fillmore Farms	Bennington, Vt	Best Exhibitor's Flock	15 00
Fillmore Farms	Bennington, Vt	2d Best	10 00
John R. Nash	Lipton, Ind	3d Best	5 00
Fillmore Farms	Bennington, Vt	Best Breeder's Young Flock	15 00
John R. Nash	Lipton, Ind	2d Best	10 00
H. H. Cherry	Xenia, O	3d Best	5 00

DORSETS—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
Fillmore Farms	Bennington, Vt.	Best Get of Sire	$12 00
John R. Nash	Lipton, Ind	2d Best	6 00
H. H. Cherry	Xenia, O.	3d Best	3 00
Fillmore Farms	Bennington, Vt.	Champion Ram any age— Fillmore's 45	15 00
Fillmore Farms	Bennington, Vt.	Champion Ewe any age— Fillmore's 160	15 00

CHEVIOTS.

Name of Owner.	Postoffice.	Awards.	Amount.
Boyd & King	Hillsboro, O.	Best Ram 2 Years or Over— Prince Illington, 3198	$15 00
W. D. Calland & Son	Degraff, O., R. R. 2	2d Best	8 00
Wayne C. Postle	Camp Chase, O.	3d Best	5 00
Boyd & King	Hillsboro, O.	Best Ram 1 Year and Under 2— Renwood Joe, 5082.	12 00
Boyd & King	Hillsboro, O.	2d Best Bryant, 5083	7 00
W. D. Calland & Son	Degraff, O.	3d Best	4 00
Boyd & King	Hillsboro, O.	Best Ram Under 1 Year	10 00
W. D. Calland & Son	Degraff, O.	2d Best	5 00
Boyd & King	Hillsboro, O.	3d Best	3 00
Boyd & King	Hillsboro, O.	Best Ewe 2 Years or Over— Whitelse, 5056	15 00
Wayne C. Postle	Camp Chase, O.	2d Best	8 00
Boyd & King	Hillsboro, O.	3d Best—Illington 23—4727	5 00
Boyd & King	Hillsboro, O.	Best Ewe 1 Year and Under 2— Lady Lonsdale, 5060	12 00
W. D. Calland & Son	Degraff, O.	2d Best	7 00
Boyd & King	Hillsboro, O.	3d Best—Kenwood No. 4—4865	4 00
Boyd & King	Hillsboro, O.	Best Ewe Under 1 Year	10 00
Boyd & King	Hillsboro, O.	2d Best	5 00
Wayne C. Postle	Camp Chase, O.	3d Best	3 00
Boyd & King	Hillsboro, O.	Best Exhibitor's Flock	15 00
Boyd & King	Hillsboro, O.	2d Best	10 00
W. D. Calland & Son	Degraff, O.	3d Best	5 00
Boyd & King	Hillsboro, O.	Best Breeder's Young Flock	15 00
Wayne C. Postle	Camp Chase, O.	2d Best	10 00
Boyd & King	Hillsboro, O.	Best Get of Sire	12 00
Wayne C. Postle	Camp Chase, O.	2d Best	6 00
Boyd & King	Hillsboro, O.	Champion Ram any age	15 00
Boyd & King	Hillsboro, O.	Champion Ewe any age	15 00

FAT SHEEP.

Name of Owner.	Postoffice.	Awards.	Amount.
T. D. Postle	Camp Chase, O.	Best Wether 1 Year and Under 2	$8 00
T. D. Postle	Camp Chase, O.	Best Pen 4 Wethers any age.	12 00

ANGORA GOATS.

Name of Owner.	Postoffice.	Awards.	Amount.
Clark Bros.	Freeport, O.	Best Aged Buck	$8 00
Clark Bros.	Freeport, O.	Best Yearling Buck	8 00
Clark Bros.	Freeport, O.	Best Buck Kid	5 00
Clark Bros.	Freeport, O.	2d Best	3 00
Clark Bros.	Freeport, O.	Best Aged Doe	8 00
Clark Bros.	Freeport, O.	2d Best	5 00
Clark Bros.	Freeport, O.	Best Yearling Doe	8 00
Clark Bros.	Freeport, O.	2d Best	5 00
Clark Bros.	Freeport, O.	Best Doe Kid	5 00

FIFTH DEPARTMENT—POULTRY.

C. W. McFARLAND, Member in Charge.

AMERICAN CLASS—BARRED PLYMOUTH ROCK.

Name of Owner.	Postoffice.	Awards.	Amount.
M. M. Myers	Marysville, O.	Best Cock	$2 00
Chas. McClave	New London, O.	2d Best	1 00
James Corfman	Leipsic, O.	Best Cockerel	2 00
Ashland Poultry Association, W. A. Mason, Sec'y	Ashland, O.	2d Best	1 00
Oscar E. Miles	Columbus, O., Cap. Trust Bldg., 11th Floor	Best Hen	2 00
Oscar E. Miles	Columbus, O.	2d Best	1 00
James Creeger	Tiffin, O.	Best Pullet	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Breeding Pen	3 00
Oscar E. Miles	Columbus, O.	2d Best	2 00

WHITE PLYMOUTH ROCK.

Name of Owner.	Postoffice.	Awards.	Amount.
J. D. Yocum & Sons	Mechanicsburg, O.	Best Cock	2 00
J. L. Beringer	Marion, O.	2d Best	1 00
Stocklein & Steinmetz	Glouster, O.	Best Cockerel	2 00
Stocklein & Steinmetz	Glouster, O.	2d Best	1 00
S. M. Dickinson	Granville, O.	Best Hen	2 00
Ashland Poultry Ass'n	Columbus, O.	2d Best	1 00
S. M. Dickinson	Granville, O.	Best Pullet	2 00
Stocklein & Steinmetz	Glouster, O.	2d Best	1 00
Stocklein & Steinmetz	Glouster, O.	Best Breeding Pen	3 00
S. M. Dickinson	Granville, O.	2d Best	2 00

BUFF PLYMOUTH ROCK.

Name of Owner.	Postoffice.	Awards.	Amount.
M. M. Myers	Marysville, O.	Best Cock	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
Ralph Bulkley	Columbus, O.	Best Cockerel	2 00
D. J. Babson	Cardington, O.	2d Best	1 00
Ashland Poultry Ass'n	Ashland, O.	Best Hen	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Pullet	2 00
E. H. Lantz	Trimble, O.	2d Best	1 00
E. H. Lantz	Trimble, O.	Best Breeding Pen	3 00
M. M. Myers	Marysville, O.	2d Best	2 00

WHITE ORPINGTON.

Name of Owner.	Postoffice.	Awards.	Amount.
E. O. Richardson	Marion, O.	Best Cock	2 00
E. O. Richardson	Marion, O.	Best Hen	2 00

BLACK ORPINGTON.

Name of Owner.	Postoffice.	Awards.	Amount.
Ashland Poultry Ass'n	Ashland, O.	Best Cock	2 00
Dr. W. H. Woodworth	Delaware, O.	2d Best	1 00
Joe Coleman	Bellville, O	Best Cockerel	2 00
Dr. W. H. Woodworth	Delaware, O.	2d Best	1 00
Ashland Poultry Ass'n	Ashland, O.	Best Hen	2 00
Dr. W. H. Woodworth	Delaware, O.	2d Best	1 00
Joe Coleman	Bellville, O.	Best Pullet	2 00
Joe Coleman	Bellville, O.	2d Best	1 00

BUFF ORPINGTON.

Name of Owner.	Postoffice.	Awards.	Amount.
H. M. Close	Newark, O.	Best Cock	2 00
H. M. Close	Newark, O.	2d Best	1 00
Frank Morcher	Tiffin, O.	Best Cockerel	2 00
Frank Morcher	Tiffin, O.	2d Best	1 00
H. M. Close	Newark, O.	Best Hen	2 00
H. M. Close	Newark, O	2d Best	1 00
Chas. McClave	New London, O.	Best Pullet	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Breeding Pen	3 00
H. M. Close	Newark, O	2d Best	2 00

POULTRY—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
COLUMBIAN WYANDOTTE.			
S. T. Campbell	Mansfield, O.	Best Cock	$2 00
Howard Powell	Newark, O.	2d Best	1 00
S. T. Campbell	Mansfield, O.	Best Cockerel	2 00
S. T. Campbell	Mansfield, O.	2d Best	1 00
S. T. Campbell	Mansfield, O.	Best Hen	2 00
Chas. McClave	New London, O.	2d Best	1 00
S. T. Campbell	Mansfield, O.	Best Pullet	2 00
S. T. Campbell	Mansfield, O.	2d Best	1 00
SILVER WYANDOTTE.			
Chas. McClave	New London, O.	Best Cock	2 00
Adolph Lehne	Mechanicsburg, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel	2 00
Adolph Lehne	Mechanicsburg, O.	2d Best	1 00
Adolph Lehne	Mechanicsburg, O.	Best Hen	2 00
Adolph Lehne	Mechanicsburg, O.	2d Best	1 00
Adolph Lehne	Mechanicsburg, O.	Best Pullet	2 00
Adolph Lehne	Mechanicsburg, O.	2d Best	1 00
Adolph Lehne	Mechanicsburg, O.	Best Breeding Pen	3 00
Adolph Lehne	Mechanicsburg, O.	2d Best	2 00
GOLDEN WYANDOTTE.			
Chas. McClave	New London, O.	Best Cock	2 00
John B. Acker	Urbana, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel	2 00
John B. Acker	Urbana, O	2d Best	1 00
John B. Acker	Urbana, O	Best Hen	2 00
Chas. McClave	New London, O.	2d Best	1 00
John B. Acker	Urbana, O	Best Pullet	2 00
John B. Acker	Urbana, O.	2d Best	1 00
John B. Acker	Urbana, O.	Best Breeding Pen	3 00
Chas. McClave	New London, O.	2d Best	2 00
WHITE WYANDOTTE.			
A. C. Wagner	Tiffin, O	Best Cock	2 00
Ashland Poultry Ass'n	Ashland, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel	2 00
Mrs. Anna Gilvin	Linden Heights	2d Best	1 00
Chas. McClave	New London, O.	Best Hen	2 00
Hartman Stock Farm Poultry Yards	Columbus, O., Station C	2d Best	1 00
Chas. McClave	New London, O.	Best Pullet	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Breeding Pen	3 00
Hartman Stock Farm Poultry Yards	Columbus, O	2d Best	2 00
BLACK WYANDOTTE.			
Chas. McClave	New London, O.	Best Cock	2 00
S. E. Wurst	Elyria, O	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel	2 00
H. M. Close	Newark, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Hen	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Pullet	2 00
C. W. Smith	Cardington, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Breeding Pen	3 00
BUFF WYANDOTTE.			
Ashland Poultry Ass'n	Ashland, O.	Best Cock	2 00
Ashland Poultry Ass'n	Ashland, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel	2 00
V. Crabtree	Tiffin, O	2d Best	1 00
V. Crabtree	Tiffin, O	Best Hen	2 00
Chas. McClave	New London, O.	2d Best	1 00
Ashland Poultry Ass'n	Ashland, O	Best Pullet	2 00
Chas. McClave	New London, O.	2d Best	1 00
V. Crabtree	Tiffin, O	Best Breeding Pen	3 00
Chas. McClave	New London, O.	2d Best	2 00

POULTRY—Continued.

Name of Owner.	Postoffice.	Awards.	

PARTRIDGE WYANDOTTE.

Chas. McClave	New London, O.	Best Cock	$2 00
Hartman Stock Farm Poultry Yards	Columbus, O., Station C	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel	2 00
C. W. Smith	Cardington, O	2d Best	1 00
Chas. McClave	New London, O.	Best Hen	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Pullet	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O	Best Breeding Pen	3 00
Hartman Stock Farm Poultry Yards	Columbus, O., Station C	2d Best	2 00

SILVER-PENCILED WYANDOTTE.

Chas. McClave	New London, O.	Best Cock	2 00
Chas. McClave	New London, O.	Best Cockerel	2 00
C. W. Smith	Cardington, O	2d Best	1 00
Chas. McClave	New London, O.	Best Hen	2 00
Chas. McClave	New London, O.	Best Pullet	2 00
C. W. Smith	Cardington, O	2d Best	1 00

BLACK JAVA.

Chas. McClave	New London, O.	Best Cock	2 00
A. H. Kochensparger	Junction City, O., R. R. 3	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel	2 00
Chas. McClave	New London, O.	2d Best	1 00
A. H. Kochenspagrer	Junction City, O	Best Hen	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Pullet	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Breeding Pen	3 00

BUCKEYE RED.

S. E. Wurst	Elyria, O	Best Cockerel	2 00
Chas. McClave	New London, O.	Best Hen	2 00
Chas. McClave	New London, O.	Best Pullet	2 00
S. E. Wurst	Elyria, O	2d Best	1 00

R. C. RHODE ISLAND RED.

Chas. McClave	New London, O.	Best Cock	2 00
White Bros	Sunbury, O	2d Best	1 00
M. J. Nash	Jackson Center, O.	Best Cockerel	2 00
Chas. McClave	New London, O.	2d Best	1 00
F. H. Chase	Cardington, O	Best Hen	2 00
A. G. Clark	Willoughby, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Pullet	2 00
A. G. Clark	Willoughby, O.	2d Best	1 00

S. C. RHODE ISLAND RED.

Oscar E. Miles	Columbus, O	Best Cock	2 00
Oscar E. Miles	Columbus, O	2d Best	1 00
M. J. Nash	Jackson Centre, O.	Best Cockerel	2 00
White Bros	Sunbury, O	2d Best	1 00
Oscar E. Miles	Columbus, O	Best Hen	2 00
Oscar E. Miles	Columbus, O	2d Best	1 00
M. J. Nash	Jackson Center, O.	Best Pullet	2 00
Oscar E. Miles	Columbus, O	2d Best	1 00

ASIATIC CLASS—LIGHT BRAHMA.

H. Wilson	Springfield, O., 56 W. Columbia St.	Best Cock	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel	2 00
Geo. W. Caton	Zanesville, O	2d Best	1 00
Chas. McClave	New London, O.	Best Hen	2 00
H. Wilson	Springfield, O	2d Best	1 00
Chas. McClave	New London, O.	Best Pullet	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Breeding Pen	3 00

POULTRY—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
DARK BRAHMA.			
I. M. & J. W. Farber	Sandyville, O.	Best Cock	$2 00
C. W. Smith	Cardington, O	2d Best	1 00
I. M. & J. W. Farber	Sandyville, O.	Best Cockerel	2 00
C. W. Smith	Cardington, O	2d Best	1 00
C. W. Smith	Cardington, O	Best Hen	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
I. M. & J. W. Farber	Sandyville, O.	Best Pullet	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
I. M. & J. W. Farber	Sandyville, O.	Best Breeding Pen	3 00
C. W. Smith	Cardington, O	2d Best	2 00
BUFF COCHIN.			
I. M. & J. W. Farber	Sandyville, O.	Best Cock	2 00
C. W. Smith	Cardington, O	2d Best	1 00
C. L. V. Curtis	Ashland, O.	Best Cockerel	2 00
C. L. V. Curtis	Ashland, O.	2d Best	1 00
C. L. V. Curtis	Ashland, O.	Best Hen	2 00
C. W. Smith	Cardington, O	2d Best	1 00
C. L. V. Curtis	Ashland, O.	Best Pullet	2 00
C. L. V. Curtis	Ashland, O.	2d Best	1 00
C. L. V. Curtis	Ashland, O.	Best Breeding Pen	3 00
C. W. Smith	Cardington, O	2d Best	2 00
PARTRIDGE COCHIN.			
I. M. & J. W. Farber	Sandyville, O.	Best Cock	2 00
Chas. McClave	New London, O.	2d Best	1 00
C. W. Smith	Cardington, O	Best Cockerel	2 00
C. W. Smith	Cardington, O	Best Hen	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Pullet	2 00
C. W. Smith	Cardington, O	2d Best	1 00
Chas. McClave	New London, O.	Best Breeding Pen	3 00
C. W. Smith	Cardington, O	2d Best	2 00
WHITE COCHIN.			
H. Wilson	Springfield, O	Best Cock	2 00
Chas. McClave	New London, O.	2d Best	1 00
I. M. & J. W. Farber	Sandyville, O.	Best Cockerel	2 00
M. M. Myers	Marysville, O	2d Best	1 00
C. W. Smith	Cardington, O	Best Hen	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
Ashland Poultry Ass'n	Ashland, O.	Best Pullet	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
C. W. Smith	Cardington, O	Best Breeding Pen	3 00
BLACK COCHIN.			
H. Wilson	Springfield, O	Best Cock	2 00
I. M. & J. W. Farber	Sandyville	2d Best	1 00
I. M. & J. W. Farber	Sandyville, O.	Best Cockerel	2 00
C. W. Smith	Cardington, O	2d Best	1 00
H. Wilson	Springfield, O	Best Hen	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
I. M. & J. W. Farber	Sandyville, O.	Best Pullet	2 00
C. W. Smith	Cardington, O	2d Best	1 00
I. M. & J. W. Farber	Sandyville, O.	Best Breeding Pen	3 00
C. W. Smith	Cardington, O	2d Best	2 00
BLACK LANGSHAN.			
A. H. Kochensparger	Junction City, O	Best Cock	2 00
S. E. Wurst	Elyria, O	2d Best	2 00
I. M. & J. W. Farber	Sandyville, O.	Best Cockerel	2 00
D. J. Babson	Cardington, O	2d Best	1 00
Geo. W. Caton	Zanesville, O	Best Hen	2 00
Geo. W. Caton	Zanesville, O	2d Best	1 00
M. M. Myers	Marysville, O	Best Pullet	2 00
Geo. W. Caton	Zanesville, O	2d Best	1 00
Geo. W. Caton	Zanesville, O	Best Breeding Pen	3 00
D. J. Babson	Cardington, O	2d Best	2 00
WHITE LANGSHAN.			
I. M. & J. W. Farber	Sandyville, O.	Best Cock	2 00
Geo. W. Caton	Zanesville, O	2d Best	1 00
I. M. & J. W. Farber	Sandyville, O.	Best Cockerel	2 00
Geo. W. Caton	Zanesville, O	2d Best	1 00
I. M. & J. W. Farber	Sandyville, O.	Best Hen	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
Geo. W. Caton	Zanesville, O	Best Pullet	2 00

POULTRY—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
MEDITERRANEAN CLASS—S. C. BROWN LEGHORN.			
Chas. McClave	New London, O.	Best Cock	$2 00
F. H. Russell	Wakeman, O.	2d Best	1 00
C. Jackson	Buchtel, O.	Best Cockerel	2 00
Geo. W. Caton	Zanesville, O.	2d Best	1 00
Mrs. C. E. Demand	Mechanicsburg, O.	Best Hen	2 00
Chas. McClave	New London, O.	2d Best	1 00
C. Jackson	Buchtel, O	Best Pullet	2 00
Chas. McClave	New London, O.	2d Best	1 00
C. Jackson	Buchtel, O	Best Breeding Pen	3 00
Chas. McClave	New London, O.	2d Best	2 00
R. C. BROWN LEGHORN.			
Chas. McClave	New London, O.	Best Cock	2 00
Geo. W. Caton	Zanesville, O	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel	2 00
C. H. Sheets	Sunbury, O., R. R. 3	2d Best	1 00
S. E. Wurst	Elyria, O	Best Hen	2 00
C. W. Smith	Cardington, O	2d Best	1 00
C. H. Sheets	Sunbury, O	Best Pullet	2 00
C. H. Sheets	Sunbury, O	2d Best	1 00
Chas. McClave	New London, O.	Best Breeding Pen	3 00
Geo. W. Caton	Zanesville, O	2d Best	2 00
S. C. WHITE LEGHORN.			
Chas. McClave	New London, O.	Best Cock	2 00
Hartman Stock Farm Poultry Yards	Columbus, O	2d Best	1 00
M. M. Myers	Marysville, O.	Best Cockerel	2 00
Chas. McClave	New London, O.	2d Best	1 00
Hartman Stock Farm Poultry Yards	Columbus, O	Best Hen	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Pullet	2 00
Hartman Stock Farm Poultry Yards	Columbus, O	2d Best	1 00
Chas. McClave	New London, O.	Best Breeding Pen	3 00
Hartman Stock Farm Poultry Yards	Columbus, O	2d Best	2 00
R. C. WHITE LEGHORN.			
Chas. McClave	New London, O.	Best Cock	2 00
A. H. Kochensparger	Junction City, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel	2 00
S. E. Wurst	Elyria, O	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Hen	2 00
C. W. Smith	Cardington, O	2d Best	1 00
S. E. Wurst	Elyria, O	Best Pullet	2 00
Chas. McClave	New London, O	2d Best	1 00
Chas. McClave	New London, O.	Best Breeding Pen	3 00
C. W. Smith	Cardington, O	2d Best	2 00
BLACK LEGHORN.			
M. M. Myers	Marysville, O.	Best Cock	2 00
Ralph Wilson	Bloomville, O	2d Best	1 00
M. M. Myers	Marysville, O.	Best Cockerel	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
M. M. Myers	Marysville' O.	Best Hen	2 00
S. E. Wurst	Elyria, O	2d Best	1 00
C. H. Sheets	Sunbury, O	Best Pullet	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
BUFF LEGHORN.			
Chas. McClave	New London, O.	Best Cock	2 00
Geo. W. Caton	Zanesville, O	2d Best	1 00
S. E. Wurst	Elyria, O	Best Cockerel	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Hen	2 00
S. E. Wurst	Elyria, O	2d Best	1 00
S. E. Wurst	Elyria, O	Best Pullet	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Breeding Pen	3 00

POULTRY—Continued.

BLACK MINORCA.

Name of Owner.	Postoffice.	Awards.	Amount.
S. E. Wurst	Elyria, O.	Best Cock	$2 00
A. H. Kochensparger	Junction City, O	2d Best	1 00
E. O. & H. A. Schenck	Columbus, O., 1068 S. High St.	Best Cockerel	2 00
C. Jackson	Buchtel, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Hen	2 00
A. H. Kochensparger	Junction City, O.	2d Best	1 00
C. Jackson	Buchtel, O.	Best Pullet	2 00
Chas. McClave	New London, O	2d Best	1 00
Chas. McClave	New London, O.	Best Breeding Pen	3 00
C. Jackson	Buchtel, O.	2d Best	2 00

R. C. BLACK MINORCA.

Name of Owner.	Postoffice.	Awards.	Amount.
S. T. Campbell	Mansfield, O.	Best Cock	2 00
Chas. McClave	New London, O.	2d Best	1 00
S. T. Campbell	Mansfield, O.	Best Cockerel	2 00
S. T. Campbell	Mansfield, O.	2d Best	1 00
S. T. Campbell	Mansfield, O.	Best Hen	2 00
S. T. Campbell	Mansfield, O.	2d Best	1 00
S. T. Campbell	Mansfield, O.	Best Pullet	2 00
S. T. Campbell	Mansfield, O.	2d Best	1 00
S. T. Campbell	Mansfield, O.	Best Breeding Pen	3 00
S. T. Campbell	Mansfield, O.	2d Best	2 00

WHITE MINORCA.

Name of Owner.	Postoffice.	Awards.	Amount.
Harry Liebold	Delaware, O.	Best Cock	2 00
Harry Liebold	Delaware, O.	2d Best	1 00
Harry Liebold	Delaware, O.	Best Cockerel	2 00
John Eustice	Columbus, O., 1045 Hildreth Av.	2d Best	1 00
Harry Liebold	Delaware, O.	Best Hen	2 00
Harry Liebold	Delaware, O.	2d Best	1 00
Harry Liebold	Delaware, O.	Best Pullet	2 00
Harry Liebold	Delaware, O.	2d Best	1 00
Harry Liebold	Delaware, O.	Best Breeding Pen	3 00
Harry Liebold	Delaware, O.	2d Best	2 00

BLUE ANDALUSIAN.

Name of Owner.	Postoffice.	Awards.	Amount.
Chas. McClave	New London, O.	Best Cock	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Hen	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Pullet	2 00
Chas. McClave	New London, O.	2d Best	1 00

BLACK SPANISH.

Name of Owner.	Postoffice.	Awards.	Amount.
S. E. Wurst	Elyria, O.	Best Cock	2 00
I. M. & J W. Farber	Sandyville, O	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Cockerel	2 00
H. Wilson	Springfield, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Hen	2 00
John Eustice	Columbus, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Pullet	2 00
H. Wilson	Springfield, O.	2d Best	1 00
I. M. & J. W. Farber	Sandyville, O	Best Breeding Pen	3 00

POLISH CLASS—W. C. BLACK POLISH.

Name of Owner.	Postoffice.	Awards.	Amount.
I. M. & J. W. Farber	Sandyville, O.	Best Cock	2 00
Geo. W. Caton	Zanesville, O.	2d Best	1 00
Guy Brown	Mt. Gilead, O., R. R. 3	Best Cockerel	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
Julius Frank	Akron, O., R. R. 25	Best Hen	2 00
Guy Brown	Mt. Gilead, O.	2d Best	1 00
Guy Brown	Mt. Gilead, O.	Best Pullet	2 00
Guy Brown	Mt. Gilead, O.	2d Best	1 00
Guy Brown	Mt. Gilead, O.	Best Breeding Pen	3 00

SILVER POLISH—BEARDED OR PLAIN.

Name of Owner.	Postoffice.	Awards.	Amount.
H. Wilson	Springfield, O.	Best Cock	2 00
I. M. & J W. Farber	Sandyville, O.	2d Best	1 00
H. Wilson	Springfield, O.	Best Cockerel	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
M. M. Myers	Marysville, O	Best Hen	2 00
H. Wilson	Springfield, O.	2d Best	1 00
H. Wilson	Springfield, O.	Best Pullet	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00

POULTRY—Continued.

WHITE POLISH—BEARDED OR PLAIN.

Name of Owner.	Postoffice.	Awards.	Amount.
Glenn Brown	Mt. Gilead, O., R. R. 3	Best Cock	$2 00
Glenn Brown	Mt. Gilead, O.	2d Best	1 00
Glenn Brown	Mt. Gilead, O.	Best Cockerel	2 00
Glenn Brown	Mt. Gilead, O.	Best Hen	2 00
Glenn Brown	Mt. Gilead, O.	2d Best	1 00
I. M. & J. W Farber	Sandyville, O.	Best Pullet	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
I. M. & J. W. Farber	Sandyville, O.	Best Breeding Pen	3 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	2 00

GOLDEN POLISH—BEARDED OR PLAIN.

Name of Owner.	Postoffice.	Awards.	Amount.
I. M. & J. W. Farber	Sandyville, O.	Best Cock	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
H. Wilson	Springfield, O.	Best Cockerel	2 00
Julius Frank	Akron, O.	2d Best	1 00
H. Wilson	Springfield, O.	Best Hen	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
H. Wilson	Springfield, O.	Best Pullet	2 00
Julius Frank	Akron, O.	2d Best	1 00

BUFF LACED POLISH.

Name of Owner.	Postoffice.	Awards.	Amount.
I. M. & J. W. Farber	Sandyville, O.	Best Cock	2 00
H. Wilson	Springfield, O.	2d Best	1 00
H. Wilson	Springfield, O.	Best Cockerel	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
I. M. & J. W. Farber	Sandyville, O.	Best Hen	2 00
H. Wilson	Springfield, O.	2d Best	1 00
H. Wilson	Springfield, O.	Best Pullet	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00

HAMBURG CLASS—GOLDEN SPANGLED HAMBURG.

Name of Owner.	Postoffice.	Awards.	Amount.
I. M. & J. W. Farber	Sandyville, O.	Best Cock	2 00
Chas. McClave	New London, O.	2d Best	1 00
H. Wilson	Springfield, O.	Best Cockerel	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
Julius Frank	Akron, O.	Best Hen	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
H. Wilson	Springfield, O.	Best Pullet	2 00
Julius Frank	Akron, O.	2d Best	1 00
I. M. & J. W. Farber	Sandyville, O.	Best Breeding Pen	3 00
Julius Frank	Akron, O.	2d Best	2 00

SILVER SPANGLED HAMBURG.

Name of Owner.	Postoffice.	Awards.	Amount.
Julius Frank	Akron, O.	Best Cock	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
Julius Frank	Akron, O.	Best Cockerel	2 00
Chas. McClave	New London, O.	2d Best	1 00
Julius Frank	Akron, O.	Best Hen	2 00
Julius Frank	Akron, O.	2d Best	1 00
Julius Frank	Akron, O.	Best Pullet	2 00
Julius Frank	Akron, O.	2d Best	1 00
Julius Frank	Akron, O.	Best Breeding Pen	3 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	2 00

GOLDEN PENCILED HAMBURG

Name of Owner.	Postoffice.	Awards.	Amount.
Julius Frank	Akron, O.	Best Cock	2 00
Julius Frank	Akron, O.	2d Best	1 00
Julius Frank	Akron, O.	Best Cockerel	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
Julius Frank	Akron, O.	Best Hen	2 00
Julius Frank	Akron, O.	2d Best	1 00
Julius Frank	Akron, O.	Best Pullet	2 00
Julius Frank	Akron, O.	2d Best	1 00
Julius Frank	Akron, O.	Best Breeding Pen	3 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	2 00

SILVER PENCILED HAMBURG.

Name of Owner.	Postoffice.	Awards.	Amount.
Julius Frank	Akron, O.	Best Cock	2 00
H. Wilson	Springfield, O.	2d Best	1 00
Julius Frank	Akron, O.	Best Cockerel	2 00
Julius Frank	Akron, O.	2d Best	1 00
I. M. & J. W. Farber	Sandyville, O.	Best Hen	2 00
Julius Frank	Akron, O.	2d Best	1 00
H. Wilson	Springfield, O.	Best Pullet	2 00
Glenn Brown	Mt. Gilead, O.	2d Best	1 00

POULTRY—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
BLACK HAMBURG.			
Julius Frank	Akron, O	Best Cock	$2 00
I. M. & J. W. Farber	Sandyville, O	2d Best	1 00
Julius Frank	Akron, O	Best Cockerel	2 00
Julius Frank	Akron, O	2d Best	1 00
Julius Frank	Akron, O	Best Hen	2 00
I. M. & J. W. Farber	Sandyville, O	2d Best	1 00
Julius Frank	Akron, O	Best Pullet	2 00
Julius Frank	Akron, O	2d Best	1 00
Julius Frank	Akron, O	Best Breeding Pen	3 00
I. M. & J. W. Farber	Sandyville, O	2d Best	2 00
WHITE HAMBURG.			
M. M. Myers	Marysville, O	Best Cock	2 00
I. M. & J. W. Farber	Sandyville, O	2d Best	1 00
M. M. Myers	Marysville, O	Best Cockerel	2 00
Glenn Brown	Mt. Gilead, O	2d Best	1 00
Glenn Brown	Mt. Gilead, O	Best Hen	2 00
Glenn Brown	Mt. Gilead, O	2d Best	1 00
Glenn Brown	Mt. Gilead, O	Best Pullet	2 00
M. M. Myers	Marysville, O	2d Best	1 00
Glenn Brown	Mt. Gilead, O	Best Breeding Pen	3 00
M. M. Myers	Marysville, O	2d Best	2 00
RED CAP.			
S. E. Wurst	Elyria, O	Best Cock	2 00
H. Wilson	Springfield, O	2d Best	1 00
Chas. McClave	New London, O	Best Cockerel	2 00
H. Wilson	Springfield, O	2d Best	1 00
M. M. Myers	Marysville, O	Best Hen	2 00
A. H. Kochensparger	Junction City, O	2d Best	1 00
Chas. McClave	New London, O	Best Pullet	2 00
Chas. McClave	New London, O	2d Best	1 00
Chas. McClave	New London, O	Best Breeding Pen	3 00
I. M. & J. W. Farber	Sandyville, O	2d Best	2 00
FRENCH CLASS—HOUDAN.			
Chas. McClave	New London, O	Best Cock	2 00
Geo. W. Caton	Zanesville, O	2d Best	1 00
Chas. McClave	New London, O	Best Cockerel	2 00
I. M. & J. W. Farber	Sandyville, O	2d Best	1 00
M. M. Myers	Marysville, O	Best Hen	2 00
Chas. McClave	New London, O	2d Best	1 00
Chas. McClave	New London, O	Best Pullet	2 00
I. M. & J. W. Farber	Sandyville, O	2d Best	1 00
CREVECOEUR.			
I. M. & J. W. Farber	Sandyville, O	Best Cock	2 00
I. M &. J. W. Farber	Sandyville, O	Best Cockerel	2 00
I. M. & J. W. Farber	Sandyville, O	Best Hen	2 00
H. Wilson	Springfield, O	2d Best	1 00
I. M. & J. W .Farber	Sandyville, O	Best Pullet	2 00
LA FLECHE.			
I. M. & J. W. Farber	Sandyville, O	Best Cock	2 00
S. E. Wurst	Elyria, O	2d Best	1 00
I. M. & J. W. Farber	Sandyville, O	Best Cockerel	2 00
H. Wilson	Springfield, O	2d Best	1 00
I. M. & J. W. Farber	Sandyville, O	Best Hen	2 00
H. Wilson	Springfield, O	2d Best	1 00
I. M. & J. W. Farber	Sandyville, O	Best Pullet	2 00
DORKING CLASS—COLORED DORKING.			
H. Wilson	Springfield, O	Best Cock	2 00
H. Wilson	Springfield, O	Best Cockerel	2 00
S. E. Wurst	Elyria, O	2d Best	1 00
S. E. Wurst	Elyria, O	Best Hen	2 00
M. M. Myers	Marysville, O	2d Best	1 00
H. Wilson	Springfield, O	Best Pullet	2 00

POULTRY—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
SILVER GRAY DORKING.			
S. E. Wurst	Elyria, O.	Best Cock	$2 00
H. Wilson	Springfield, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Cockerel	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
M. M. Myers	Marysville, O.	Best Hen	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Pullet	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
WHITE DORKING.			
S. E. Wurst	Elyria, O.	Best Cock	2 00
H. Wilson	Springfield, O.	2d Best	1 00
S E. Wurst	Elyria, O.	Best Cockerel	2 00
I. M. & J. W. Farber	Sandyville, O.	Best Hen	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Pullet	2 00
GAME CLASS—BLACK-BREASTED RED GAME.			
H. Wilson	Springfield, O.	Best Cock	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Cockerel	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Hen	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Pullet	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
BROWN RED GAME.			
H. Wilson	Springfield, O.	Best Cock	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Cockerel	2 00
Chas. McClave	New London, O.	Best Hen	2 00
H. Wilson	Springfield, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Pullet	2 00
BIRCHEN GAME.			
H. Wilson	Springfield, O.	Best Cock	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Cockerel	2 00
H. Wilson	Springfield, O.	Best Hen	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Pullet	2 00
BLACK GAME.			
S. E. Wurst	Elyria, O.	Best Cock	2 00
H. Wilson	Springfield, O.	Best Cockerel	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Hen	2 00
S. E. Wurst	Elyria, O.	Best Pullet	2 00
WHITE GAME.			
M. M. Myers	Marysville, O.	Best Cock	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Cockerel	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
M. M. Myers	Marysville, O.	Best Hen	2 00
S. E. Wurst	Elyria, O.	Best Pullet	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
SUMATRA GAME.			
M. M. Myers	Marysville, O.	Best Cock	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Cockerel	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
M. M. Myers	Marysville, O.	Best Hen	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Pullet	2 00
M. M. Myers	Marysville, O.	2d Best	1 00

POULTRY—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
SILVER OR GOLDEN DUCKWING GAME			
S. E. Wurst	Elyria, O	Best Cock	$2 00
H. Wilson	Springfield, O	2d Best	1 00
S. E. Wurst	Elyria, O	Best Cockerel	2 00
Geo. W. Caton	Zanesville, O	2d Best	1 00
S. E. Wurst	Elyria, O	Best Hen	2 00
H. Wilson	Springfield, O	2d Best	1 00
S. E. Wurst	Elyria, O	Best Pullet	2 00
S. E Wurst	Elyria, O	2d Best	1 00
RED PILE GAME.			
H. Wilson	Springfield, O	Best Cock	2 00
A. H. Kochensparger	Junction City, O	2d Best	1 00
S. E. Wurst	Elyria, O	Best Cockerel	2 00
Chas. McClave	New London, O	Best Hen	2 00
H. Wilson	Springfield, O	2d Best	1 00
S. E. Wurst	Elyria, O	Best Pullet	2 00
CORNISH INDIAN GAME.			
H. Wilson	Springfield, O	Best Cock	2 00
Chas. McClave	New London, O.	2d Best	1 00
M. M. Myers	Marysville, O	Best Cockerel	2 00
Chas. McClave	New London, O.	Best Hen	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Pullet	2 00
S. E. Wurst	Elyria, O	2d Best	1 00
Chas. McClave	New London, O.	Best Breeding Pen	3 00
GAME BANTAM CLASS—B. B. R. BANTAM,			
S. E. Wurst	Elyria, O	Best Cock	2 00
H. Wilson	Springfield, O	2d Best	1 00
S. E. Wurst	Elyria, O	Best Cockerel	2 00
S. E. Wurst	Elyria, O	Best Hen	2 00
H. Wilson	Springfield, O	2d Best	1 00
S. E. Wurst	Elyria, O	Best Pullet	2 00
B. R. BANTAM.			
H. Wilson	Springfield, O	Best Cock	2 00
S. E. Wurst	Elyria, O	2d Best	1 00
S. E. Wurst	Elyria, O	Best Cockerel	2 00
H. Wilson	Springfield, O	Best Hen	2 00
A. H. Kochensparger	Junction City, O	2d Best	1 00
S. E. Wurst	Elyria, O	Best Pullet	2 00
SILVER OR GOLDEN DUCKWING BANTAM.			
S. E. Wurst	Elyria, O	Best Cock	2 00
H. Wilson	Springfield, O	2d Best	1 00
A. H. Kochensparger	Junction City, O	Best Hen	2 00
H. Wilson	Springfield, O	2d Best	1 00
RED PILE BANTAM.			
H. Wilson	Springfield, O	Best Cock	2 00
S. E. Wurst	Elyria, O	2d Best	1 00
H. Wilson	Springfield, O	Best Cockerel	2 00
Chas. McClave	New London, O.	2d Best	1 00
H. Wilson	Springfield, O	Best Hen	2 00
S. E. Wurst	Elyria, O	2d Best	1 00
H. Wilson	Springfield, O	Best Pullet	2 00
H. Wilson	Springfield, O	2d Best	1 00
BANTAMS NOT GAME—GOLDEN SEBRIGHT BANTAM.			
I. M. & J. W. Farber	Sandyville, O	Best Cock	2 00
Ashland Poultry Assn	Ashland, O	2d Best	1 00
Julius Frank	Akron, O	Best Cockerel	2 00
S. E. Wurst	Elyria, O	2d Best	1 00
Geo. W. Caton	Zanesville, O	Best Hen	2 00
Julius Frank	Akron, O	2d Best	1 00
S. E. Wurst	Elyria, O	Best Pullet	2 00

POULTRY—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
SILVER SEBRIGHT BANTAM.			
I. M. & J. W. Farber	Sandyville, O.	Best Cock	$2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Cockerel.	2 00
Chas. McClave	New London, O.	2d Best	1 00
I. M. & J. W. Farber	Sandyville, O.	Best Hen	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Pullet	2 00
BUFF COCHIN BANTAM.			
S. E. Wurst	Elyria, O.	Best Cock	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
Johnson Bros	Lyndon, O.	Best Cockerel.	2 00
Chas. McClave	New London, O.	Best Hen	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
Johnson Bros	Lyndon, O.	Best Pullet	2 00
Johnson Bros	Lyndon, O	2d Best	1 00
WHITE COCHIN BANTAM.			
M. M. Myers	Marysville, O.	Best Cock	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
Glenn Brown	Mt. Gilead, O.	Best Cockerel.	2 00
D. J. Babson	Cardington, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Hen	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
D. J. Babson	Cardington, O	Best Pullet	2 00
D. J. Babson	Cardington, O	2d Best	1 00
BLACK COCHIN BANTAM.			
S. E. Wurst	Elyria, O.	Best Cock	2 00
H. Wilson	Springfield, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Cockerel.	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Hen	2 00
Chas. McClave	New London, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Pullet	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
WHITE ROSE COMBED BANTAM.			
I. M. & J. W. Farber	Sandyville, O.	Best Cock	2 00
Chas. McClave	New London, O.	2d Best	1 00
I. M. & J. W. Farber	Sandyville, O.	Best Cockerel.	2 00
Chas. McClave	New London, O.	Best Hen	2 00
Julius Frank	Akron, O.	2d Best	1 00
I. M. & J. W. Farber	Sandyville, O.	Best Pullet	2 00
BLACK ROSE COMBED BANTAM.			
Chas McClave	New London, O.	Best Cock	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel.	2 00
Chas. McClave	New London, O.	Best Hen	2 00
H. Wilson	Springfield, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Pullet	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
JAPANESE BANTAM.			
I. M. & J. W. Farber	Sandyville, O.	Best Cock	2 00
H. Wilson	Springfield, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel.	2 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Hen	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
I. M. & J. W. Farber	Sandyville, O.	Best Pullet	2 00
Chas. McClave	New London, O.	2d Best	1 00

POULTRY—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
TURKEYS.			
BRONZE.			
Geo. Brown	Hillsboro, O.	Best Cock	$2 00
Fred Anthony	North Lawrence, O.	2d Best	1 00
Geo. Brown	Hillsboro. O.	Best Cockerel	2 00
Chas. McClave	New London, O.	2d Best	1 00
Geo. Brown	Hillsboro, O.	Best Hen	2 00
Fred Anthony	North Lawrence, O.	2d Best	1 00
Geo. Brown	Hillsboro, O.	Best Pullet	2 00
Chas. McClave	New London, O.	2d Best	1 00
WHITE.			
A H. Kochensparger	Junction City, O.	Best Cock	2 00
D. J. Babson	Cardington, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Cockerel	2 00
A. H. Kochensparger	Junction City, O.	Best Hen	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Pullet	2 00
RED OR BUFF.			
Harry Prouty	Cumberland, O.	Best Cock	2 00
Harry Prouty	Cumberland, O.	2d Best	1 00
Harry Prouty	Cumberland, O.	Best Cockerel	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
Harry Prouty	Cumberland, O.	Best Hen	2 00
Harry Prouty	Cumberland, O.	2d Best	1 00
Harry Prouty	Cumberland, O.	Best Pullet	2 00
Chas. McClave	New London, O.	2d Best	1 00
NARRAGANSETT			
Chas. McClave	New London, O.	Best Cock	2 00
Chas. McClave	New London, O.	Best Cockerel	2 00
Chas. McClave	New London, O.	Best Hen	2 00
Chas. McClave	New London, O.	Best Pullet	2 00
BLACK.			
A. H. Kochensparger	Junction City, O.	Best Cock	2 00
Chas. McClave	New London, O.	2d Best	1 00
Clark Bros.	Freeport, O.	Best Cockerel	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
H. Wilson	Springfield, O.	Best Hen	2 00
A. H. Kochensparger	Junction City, O.	2d Best	1 00
Clark Bros.	Freeport, O.	Best Pullet	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
SLATE.			
Chas. McClave	New London, O.	Best Cock	2 00
A. H. Kochensparger	Junction City, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Cockerel	2 00
S. E. Wurst	Elyria, O.	Best Hen	2 00
A. H. Kochensparger	Junction City, O.	2d Best	1 00
S E. Wurst	Elyria, O.	Best Pullet	2 00
DUCKS.			
PEKIN.			
Chas. McClave	New London, O.	Best Cock	2 00
Geo. W. Caton	Zanesville, O.	2d Best	1 00
J. L. Beringer	Marion, O.	Best Cockerel	2 00
J. L. Beringer	Marion, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Hen	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
J. L. Berringer	Marion, O.	Best Pullet	2 00
Chas. McClave	New London, O.	2d Best	1 00

POULTRY—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
AYLESBURY.			
M. M. Myers	Marysville, O.	Best Cock	$2 00
Chas. McClave	New London, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Cockerel	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Hen	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
M. M. Myers	Marysville, O.	Best Pullet	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
BLUE SWEDISH.			
S. E. Wurst	Elyria, O.	Best Cockerel	2 00
S. E. Wurst	Elyria, O.	Best Pullet	2 00
ROUEN.			
M. M. Myers	Marysville, O.	Best Cock	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
M. M. Myers	Marysville, O.	Best Hen	2 00
H. Wilson	Springfield, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Pullet	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
CAYUGA.			
H. Wilson	Springfield, O.	Best Cock	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel	2 00
M. M. Myers	Marysville, O	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Hen	2 00
H. Wilson	Springfield, O.	2d Best	1 00
M. M. Myers	Marysville, O	Best Pullet	2 00
Chas. McClave	New London, O.	2d Best	1 00
CRESTED WHITE.			
Chas. McClave	New London, O	Best Cock	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel	2 00
M M. Myers	Marysville, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Hen	2 00
Chas McClave	New London, O	2d Best	1 00
Chas. McClave	New London, O	Best Pullet	2 00
Chas. McClave	New London, O.	2d Best	1 00
GRAY CALL.			
M. M. Myers	Marysville, O.	Best Cock	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
M. M. Myers	Marysville, O.	Best Hen	2 00
Chas. McClave	New London, O.	2d Best	1 00
M. M. Myers	Marysville, O.	Best Pullet	2 00
Chas. McClave	New London, O.	2d Best	1 00
WHITE CALL.			
M. M. Myers	Marysville, O.	Best Cock	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Cockerel	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Hen	2 00
M M. Myers	Marysville, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Pullet	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
MUSCOVY COLORED			
S. E. Wurst	Elyria, O.	Best Cock	2 00
Chas. McClave	New London, O.	2d Best	1 00
M. M. Myers	Marysville, O.	Best Cockerel	2 00
Clark Bros.	Freeport, O.	2d Best	1 00
M. M. Myers	Marysville, O.	Best Hen	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
M. M. Myers	Marysville, O.	Best Pullet	2 00
Clark Bros.	Freeport, O.	2d Best	1 00

POULTRY—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
MUSCOVY WHITE.			
S. E. Wurst	Elyria, O.	Best Cock	$2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel.	2 00
Chas. McClave	New London, O.	Best Hen	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Pullet	2 00
INDIAN RUNNER.			
M. M. Myers	Marysville, O.	Best Cock	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel.	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
M. M. Myers	Marysville, O.	Best Hen	2 00
Chas. McClave	New London, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Pullet	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
GEESE.			
TOULOUSE.			
Chas. McClave	New London, O.	Best Cock	2 00
Geo. W. Caton	Zanesville, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel.	2 00
Chas. McClave	New London, O.	Best Hen	2 00
Geo. W. Caton	Zanesville, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Pullet	2 00
EMBDEN.			
Chas. McClave	New London, O.	Best Cock	2 00
Geo. W. Caton	Zanesville, O.	2d Best	1 00
M. M. Myers	Marysville, O.	Best Cockerel.	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Hen	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
M. M. Myers	Marysville, O.	Best Pullet	2 00
Chas. McClave	New London, O.	2d Best	1 00
AFRICAN.			
M. M. Myers	Marysville, O.	Best Cock	2 00
Chas. McClave	New London, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Cockerel.	2 00
Chas. McClave	New London, O.	Best Hen	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
S. E. Wurst	Elyria, O.	Best Pullet	2 00
BROWN CHINESE.			
M. M. Myers	Marysville, O.	Best Cock	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel.	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Hen	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Pullet	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
WHITE CHINESE.			
Chas. McClave	New London, O.	Best Cock	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel.	2 00
M. M. Myers	Marysville, O.	2d Best	1 00
M. M. Myers	Marysville, O.	Best Hen	2 00
Geo. W. Caton	Zanesville, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Pullet	2 00
M. M. Myers	Marysville, O.	2d Best	1 00

POULTRY—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
WILD.			
Chas. McClave	New London, O.	Best Cock	$2 00
M. M. Myers	Marysville, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Cockerel	2 00
Chas. McClave	New London, O.	Best Hen	2 00
S. E. Wurst	Elyria, O.	2d Best	1 00
Chas. McClave	New London, O.	Best Pullet	2 00
ORNAMENTAL.			
Chas. McClave	New London, O.	Best Pair Pea Fowls	4 00
Chas. McClave	New London, O.	Best Pair Silkies	3 00
S. E. Wurst	Elyria, O.	2d Best	1 50
CLASS COLLECTIONS.			
Chas. McClave	New London, O.	Best American Class	4 00
I. M. & J. W. Farber	Sandyville, O.	Best Asiatic Class	4 00
Chas. McClave	New London, O.	2d Best	2 00
Chas. McClave	New London, O.	Best Mediterranean Class	4 00
S. E. Wurst	Elyria, O.	2d Best	2 00
I. M. & J. W. Farber	Sandyville, O.	Best Polish Class	4 00
S. E. Wurst	Elyria, O.	2d Best	2 00
Julius Frank	Akron, O.	Best Hamburg Class	4 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	2 00
S. E. Wurst	Elyria, O.	Best Games and Game Bantams	4 00
Chas. McClave	New London, O.	2d Best	2 00
Chas. McClave	New London, O.	Best Bantams—Not Game	4 00
I. M. & J. W. Farber	Sandyville, O.	2d Best	2 00
Chas. McClave	New London, O.	Best Turkeys	4 00
S. E. Wurst	Elyria, O.	2d Best	2 00
Chas. McClave	New London, O.	Best Geese	4 00
S. E. Wurst	Elyria, O.	2d Best	2 00
Chas. McClave	New London, O.	Best Ducks	4 00
M. M. Myers	Marysville, O.	2d Best	2 00
Chas. McClave	New London, O.	Best Collection of Poultry by One Exhibitor	Medal

SIXTH DEPARTMENT—FARM PRODUCTS.

WM. MILLER, Member in Chicago.

GRAINS, SEEDS, TOBACCO AND CEREAL MILL PRODUCTS.

WHITE WHEATS—SMOOTH.

Name of Owner.	Postoffice.	Awards.	Amount.
J. L. Keckley	Marysville, O., R. R. 3	Best Peck Early White Leader	$3 00
I. B. Keckley	Marysville, O., R. R. 3	2d Best	2 00
Harry Leibold	Delaware, O.	3d Best	1 00
I. B. Keckley	Marysville, O., R. R. 3	Best Peck Golden Coin	3 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	2 00
Harry Leibold	Delaware, O.	3d Best	1 00
J. L. Keckley	Marysville, O., R. R. 3	Best Peck International No. 6	3 00
I. B. Keckley	Marysville, O., R. R. 3	2d Best	2 00
J. L. Deal	Marysville, O., R. R. 3	3d Best	1 00
I. B. Keckley	Marysville, O., R. R. 3	Best Peck Winter King	3 00
A. H. Powell	Newark, O.	2d Best	2 00
J. L. Keckley	Marysville, O., R. R. 3	3d Best	1 00
J. L. Keckley	Marysville, O., R. R. 3	Best Peck Any Other Variety	3 00
Albert Pearce	Sharon Center, O., R. R. 1	2d Best	2 00
I. B. Keckley	Marysville, O., R. R. 3	3d Best	1 00

WHITE WHEATS—BEARDED.

Name of Owner.	Postoffice.	Awards.	Amount.
J. L. Keckley	Marysville, O., R. R. 3	Best Peck Democrat	3 00
I. B. Keckley	Marysville, O., R. R. 3	2d Best	2 00
F. M. Whipps	Mt. Victory, O.	3d Best	1 00
Harry Leibold	Delaware, O.	Best Peck Jones' Long Berry	3 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	2 00
W. D. Whipps	Marion, O.	3d Best	1 00

RED WHEATS—SMOOTH.

Name of Owner.	Postoffice.	Awards.	Amount.
I. B. Keckley	Marysville, O., R. R. 3	Best Peck Poole	3 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	2 00
F. M. Whipps	Mt. Victory, O.	3d Best	1 00
F. M. Whipps	Mt. Victory, O.	Best Peck Mealy	3 00
J. L. Deal	Marysville, O., R. R. 3	2d Best	2 00
Geo. W. Wildman	Springfield, O., R. R. 6	3d Best	1 00
Harry Leibold	Delaware, O.	Best Peck Fultz	3 00
Albert Pearce	Sharon Center, O. R. R. 1	2d Best	2 00
F. M. Whipps	Mt. Victory, O.	3d Best	1 00
Hilas E. Craig	Groveport, O.	Best Peck Any Other Variety	3 00
Albert Pearce	Sharon Center, O., R. R. 1	2d Best	2 00
F. M. Whipps	Mt. Victory, O.	3d Best	1 00

RED WHEATS—BEARDED.

Name of Owner.	Postoffice.	Awards.	Amount.
Harry Leibold	Delaware, O.	Best Peck Velvet Chaff	3 00
Albert Pearce	Sharon Center, O., R. R. 1	2d Best	2 00
A. H. Powell	Newark, O.	3d Best	1 00
F. M. Whipps	Mt. Victory, O.	Best Peck Red Cross	3 00
W. D. Whipps	Marion, O.	2d Best	2 00
I. B. Keckley	Marysville, O., R. R. 3	3d Best	1 00
Albert Pearce	Sharon Center, O., R. R. 1	Best Peck Egyptian	3 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	2 00
I. B. Keckley	Marysville, O., R. R. 3	3d Best	1 00
F. M. Whipps	Mt. Victory, O.	Best Peck Rudy	3 00
W. D. Whipps	Marion, O.	2d Best	2 00
J. L. Keckley	Marysville, O., R. R. 3	3d Best	1 00
J. L. Deal	Marysville, O., R. R. 3	Best Peck Mediterranean	3 00
Albert Pearce	Sharon Center, O., R. R. 1	2d Best	2 00
George W. Wildman	Springfield, O., R. R. 6	3d Best	1 00
Harry Leibold	Delaware, O.	Best Peck Any Other Variety	3 00
Hilas E. Craig	Groveport, O.	2d Best	2 00
A. H. Powell	Newark, O.	3d Best	1 00

FARM PRODUCTS—Continued.

WHITE OATS.

Name of Owner.	Postoffice.	Awards.	Amount.
J. L. Keckley	Marysville, O., R. R. 3	Best Peck Welcome	$3 00
F. M. Whipps	Mt. Victory, O.	2d Best	2 00
W. D. Whipps	Marion, O.	3d Best	1 00
I. B. Keckley	Marysville, O., R. R. 3	Best Peck Lincoln	3 00
Hilas E. Craig	Groveport, O.	2d Best	2 00
Harry Leibold	Delaware, O.	3d Best	1 00
J. L. Keckley	Marysville, O., R. R. 3	Best Peck White Belgian	3 00
Albert Pearce	Sharon Ctr., O., R. R. 1	2d Best	2 00
F. M. Whipps	Mt. Victory, O.	3d Best	1 00
Albert Pearce	Sharon Ctr., O., R. R. 1	Best Peck Clydesdale	3 00
Harry Leibold	Delaware, O.	2d Best	2 00
J. L. Keckley	Marysville, O., R. R. 3	3d Best	1 00
F. M. Whipps	Mt. Victory, O.	Best Peck Banner	3 00
W. D. Whipps	Marion, O.	2d Best	2 00
I. B. Keckley	Marysville, O., R. R. 3	3d Best	1 00

BLACK OATS, BARLEY, RYE, ETC.

Name of Owner.	Postoffice.	Awards.	Amount.
W. D. Whipps	Marion, O.	Best Peck Black Tartarian Oats	3 00
Harry Leibold	Delaware, O.	2d Best	2 00
I. B. Keckley	Marysville, O., R. R. 3	3d Best	1 00
W. D. Whipps	Marion, O.	Best Peck Black Russian Oats	3 00
Albert Pearce	Sharon Ctr., O., R. R. 1	2d Best	2 00
A. H. Powell	Newark, O.	3d Best	1 00
I. B. Keckley	Marysville, O., R. R. 3	Best Peck White Winter Rye	3 00
W. D. Whipps	Marion, O.	2d Best	2 00
J. L. Keckley	Marysville, O., R. R. 3	3d Best	1 00
Albert Pearce	Sharon Ctr., O., R. R. 1	Best Peck Black Winter Rye	3 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	2 00
J. L. Keckley	Marysville, O., R. R. 3	Best Peck Fall Barley	3 00
J. L Deal	Marysville, O., R. R. 3	2d Best	2 00
A. H. Powell	Newark, O.	3d Best	1 00
J. L. Keckley	Marysville, O., R. R. 3	Best Peck Spring Barley	3 00
Harry Leibold	Delaware, O.	2d Best	2 00
A. H. Powell	Newark, O.	3d Best	1 00
W. D. Whipps	Marion, O.	Best Peck Silver Hull Buckwheat	3 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	2 00
J. L. Deal	Marysville, O., R. R. 3	3d Best	1 00
Harry Leibold	Delaware, O.	Best Peck Japanese Buckwheat	3 00
A. H. Powell	Newark, O.	2d Best	2 00
F. M. Whipps	Mt. Victory, O.	3d Best	1 00
A. H. Powell	Newark, O.	Best Peck Spelt	3 00
I. B. Keckley	Marysville, O., R. R. 3	2d Best	2 00
Albert Pearce	Sharon Ctr., O., R. R. 1	3d Best	1 00
J. L. Keckley	Marysville, O., R. R. 3	Best Peck Common Flax Seed	3 00
F. M. Whipps	Mt. Victory, O.	2d Best	2 00
Albert Pearce	Sharon Ctr., O., R. R. 1	3d Best	1 00
J. L. Keckley	Marysville, O., R. R. 3	Best Peck Russian Flax Seed	3 00
I. B. Keckley	Marysville, O., R. R. 3	2d Best	2 00
W. D. Whipps	Marion, O.	Best Peck Canada Field Peas	3 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	2 00
F. M. Whipps	Mt. Victory, O.	3d Best	1 00
R. H. Deal	Marysville, O., R. R. 3	Best Peck Marrow Fat Field Peas	3 00
J. L. Deal	Marysville, O., R. R. 3	2d Best	2 00
D. Gwynn Coyner	Lyndon, O.	3d Best	1 00

GRASS SEEDS.

Name of Owner.	Postoffice.	Awards.	Amount.
M. J. & C. E. Leavitt.	Mechanicsburg, O.	Best Peck Timothy	3 00
W. D. Whipps	Marion, O.	2d Best	2 00
J. L. Keckley	Marysville, O., R. R. 3	3d Best	1 00
A. H. Powell	Newark, O.	Best Peck Kentucky Blue Grass	3 00
M. J. & C. E. Leavitt.	Mechanicsburg, O.	2d Best	2 00
F. M. Whipps	Mt. Victory, O	3d Best	1 00
M. J. & C. E. Leavitt.	Mechanicsburg, O.	Best Peck Orchard Grass	3 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	2 00
A. H. Powell	Newark, O.	3d Best	1 00
F. M. Whipps	Mt. Victory, O.	Best Peck Red Top	3 00
W. D. Whipps	Marion, O.	2d Best	2 00
A. H. Powell	Newark, O.	3d Best	1 00
Hilas E. Craig	Groveport, O.	Best Peck German Millet	3 00
W D. Whipps	Marion, O.	2d Best	2 00
J. L. Keckley	Marysville, O., R. R. 3	3d Best	1 00
J. L. Deal	Marysville, O., R. R. 3	Best Peck Hungarian Grass	3 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	2 00
W. D. Whipps	Marysville, O., R. R. 3	3d Best	1 00

FARM PRODUCTS—Continued.

CLOVER SEED.

Name of Owner.	Postoffice.	Awards.	Amount.
F. M. Whipps	Mt. Victory, O.	Best Peck Mammoth Red	$3 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	2 00
Albert Pearce	Sharon Ctr., O., R. R. 1	3d Best	1 00
Albert Pearce	Sharon Ctr., O., R. R. 1	Best Peck Common Red	3 00
W. D. Whipps	Marion, O.	2d Best	2 00
J. L. Keckley	Marysville, O., R. R. 3	3d Best	1 00
M. J. & C. E. Leavitt.	Mechanicsburg, O.	Best Peck Alsike	3 00
A. H. Powell	Newark, O.	2d Best	2 00
J. L. Keckley	Marysville, O., R. R. 3	3d Best	1 00
J. L. Keckley	Marysville, O., R. R. 3	Best Peck Crimson	3 00
W. D. Whipps	Marion, O.	2d Best	2 00
Albert Pearce	Sharon Ctr., O., R. R. 1	3d Best	1 00
J. L. Keckley	Marysville, O., R. R. 3	Best Peck Alfalfa	3 00
Albert Pearce	Sharon Ctr., O., R. R. 1	2d Best	2 00
F. M. Whipps	Mt. Victory, O.	3d Best	1 00
A. H. Powell	Newark, O.	Best Peck White	3 00
Harry Leibold	Delaware, O.	2d Best	2 00
F. M. Whipps	Mt. Victory, O.	3d Best	1 00
Harry Leibold	Delaware, O.	Best Display Grasses	10 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	5 00
Albert Pearce	Sharon Ctr., O., R. R. 1	3d Best	3 00

TOBACCO.

Name of Owner.	Postoffice.	Awards.	Amount.
F. M. Whipps	Mt. Victory, O.	Best Four Hands Ohio Seed Leaf	2 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 00
D. F. Corwin	Springboro, O.	3d Best	50
F. M. Whipps	Mt. Victory, O.	Best Four Hands White Burley	2 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 00
D. F. Corwin	Springboro, O.	3d Best	50
A. H. Powell	Newark, O.	Best Four Hands Little Dutch	2 00
Hilas E. Craig	Groveport, O.	2d Best	1 00
D. F. Corwin	Springboro, O.	3d Best	50
A. H. Powell	Newark, O.	Best Four Hands Zimmer's Spanish	2 00
D. F. Corwin	Springboro, O.	2d Best	1 00
D. F. Corwin	Springboro, O.	3d Best	50

CORN.

YELLOW CORN.

Name of Owner.	Postoffice.	Awards.	Amount.
J. L. Keckley	Marysville, O., R. R. 3	Best Fifteen Ears Leaming	$2 50
W. D. Whipps	Marion, O.	2d Best	1 50
Harry Leibold	Delaware, O.	3d Best	50
J. L. Keckley	Marysville, O., R. R. 3	Best Fifteen Ears Reid's Yellow Dent	2 50
W. D Whipps	Marion, O.	2d Best	1 50
I. B. Keckley	Marysville, O., R. R. 3	3d Best	50
J. L. Keckley	Marysville, O., R. R. 3	Best Fifteen Ears Clarage	2 50
I. B. Keckley	Marysville, O., R. R. 3	2d Best	1 50
W. D. Whipps	Marion, O.	3d Best	50
J. L. Keckley	Marysville, O., R. R. 3	Best Fifteen Ears Gold Coin	2 50
I. B. Keckley	Marysville, O , R. R. 3	2d Best	1 50
W. D. Whipps	Marion, O.	3d Best	50
J. L. Keckley	Marysville, O., R. R. 3	Best Fifteen Ears Any Other Variety	2 50
W. D. Whipps	Marion, O.	2d Best	1 50
I. B. Keckley	Marysville, O., R. R. 3	3d Best	50

WHITE CORN.

Name of Owner.	Postoffice.	Awards.	Amount.
J. L. Keckley	Marysville, O., R. R. 3	Best Fifteen Ears Boone County	2 50
I. B. Keckley	Marysville, O., R. R. 3	2d Best	1 50
Geo. W. Wildman	Springfield, O., R. R. 6	3d Best	50
I. B. Keckley	Marysville, O., R. R. 3	Best Fifteen Ears Silver Mine	2 50
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 50
Geo. W. Wildman	Springfield, O., R. R. 6	3d Best	50
W. D. Whipps	Marion, O.	Best Fifteen Ears White Cap	2 50
J. L. Keckley	Marysville, O., R. R. 3	Best Fifteen Ears Any Other Variety	2 50
I. B. Keckley	Marysville, O., R. R. 3	2d Best	1 50
F. M. Whipps	Mt. Victory, O.	3d Best	50

FARM PRODUCTS—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
		FLINT CORN.	
W. D. Whipps	Marion, O.	Best Fifteen Ears White Flint	$2 50
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 50
F. M. Whipps	Mt. Victory, O.	3d Best	50
W. D. Whipps	Marion, O.	Best Fifteen Ears Yellow Flint	2 50
I. B. Keckley	Marysville, O., R. R. 3	2d Best	1 50
F. M. Whipps	Mt. Victory, O.	3d Best	50
		POP CORN.	
I. B. Keckley	Marysville, O., R. R. 3	Best Fifteen Ears White	2 50
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 50
A. H. Powell	Newark, O.	3d Best	50
I. B. Keckley	Marysville, O., R. R. 3	Best Fifteen Ears Red	2 50
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 50
Geo. W. Wildman	Springfield, O., R. R. 6	3d Best	50
I. B. Keckley	Marysville, O., R. R. 3	Best Fifteen Ears Yellow	2 50
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 50
W. D. Whipps	Marion, O.	3d Best	50
		SWEET CORN—(CROP OF 1906).	
Geo. W. Wildman	Springfield, O., R. R. 6	Best Twenty Ears Early Sweet Corn	3 00
W. D. Whipps	Marion, O.	2d Best	2 00
Henry Leibold	Delaware, O.	3d Best	1 00
Geo. W. Wildman	Springfield, O., R. R. 6	Best Twenty Ears Late Sweet Corn	3 00
W. D. Whipps	Marion, O.	2d Best	2 00
Albert Pearce	Sharon Ctr., O., R. R. 1	3d Best	1 00
		DISPLAYS.	
W. D Whipps	Marion, O.	Best Display Fifteen Varieties Yellow Field Corn	15 00
I. B. Keckley	Marysville, O., R. R. 3	2d Best	10 00
J. L. Keckley	Marysville, O., R. R. 3	3d Best	5 00
I. B. Keckley	Marysville, O., R. R. 3	Best Display Fifteen Varieties White Field Corn	15 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	10 00
Geo. W. Wildman	Springfield, O., R. R. 6	3d Best	5 00
Harry Leibold	Delaware, O.	Best Display Ten Varieties Sweet Corn	8 00
Geo W. Wildman	Springfield, O., R. R. 6	2d Best	5 00
J. L. Keckley	Marysville, O., R. R. 3	Best Display Six Varieties Pop Corn	5 00
Harry Leibold	Delaware, O.	2d Best	3 00
I. B. Keckley	Marysville, O., R. R. 3	3d Best	2 00
J. L. Keckley	Marysville, O., R. R. 3	Best Display Corn on Stalk	10 00
I. B. Keckley	Marysville, O., R. R. 3	2d Best	7 00
Hilas E. Craig	Groveport, O.	3d Best	3 00
F. M. Whlpps	Mt. Victory, O.	Best Twenty Pounds Broom Corn	2 00

POTATOES AND ROOTS.

Name of Owner.	Postoffice.	Awards.	Amount.
A. H. Powell	Newark, O.	Best Peck Banner	$2 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 00
F. J. Coburn	Mechanicsburg, O., R. R. 3	3d Best	50
F. J. Coburn	Mechanicsburg, O., R. R. 3	Best Peck Beauty of Hebron	2 00
W. D. Whipps	Marion, O.	Best Peck Bliss Triumph	2 00
W. D. Whipps	Marion, O.	2d Best	1 00
F. J. Coburn	Mechanicsburg, O., R. R. 3	Best Peck Blue Victor	2 00
W. D. Whipps	Marion, O.	2d Best	1 00
R. H. Deal	Marysville, O., R. R. 3	3d Best	50
A. H. Powell	Newark, O.	Best Peck Burpee's Early	2 00
F. J. Coburn	Mechanicsburg, O., R. R. 3	2d Best	1 00
F. J. Coburn	Mechanicsburg, O., R. R. 3	Best Peck Carman No. 3	2 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 00
A. H. Powell	Newark, O.	3d Best	50
F. J Coburn	Mechanicsburg, O., R. R. 3	Best Peck Early Ohio	2 00
M. J. & C. E. Leavitt.	Mechanicsburg, O.	2d Best	1 00
J. L. Deal	Marysville, O., R. R. 3	3d Best	50

FARM PRODUCTS—Continued.

Name of Owner.	Potsoffice.	Awards.	Amount.
		POTATOES AND ROOTS—Continued.	
F. J. Coburn	Mechanicsburg, O., R. R. 3	Best Peck Early Pride	$2 00
M. J. & C. E. Leavitt.	Mechanicsburg, O.	2d Best	1 00
J. L. Keckley	Marysville, O., R. R. 3	3d Best	50
F. J. Coburn	Mechanicsburg, O., R. R. 3	Best Peck Early Rose	2 00
A. H. Powell	Newark, O.	2d Best	1 00
W. D. Whipps	Marion, O.	3d Best	50
A. H. Powell	Newark, O.	Best Peck Early Trumbull	2 00
A. H. Powell	Newark, O.	Best Peck Green Mountain	2 00
F. J. Coburn	Mechanicsburg, O., R. R. 3	Best Peck Irish Cobbler	2 00
A. H Powell	Newark, O.	2d Best	1 00
M. J. & C. E. Leavitt.	Mechanicsburg, O.	3d Best	50
A. H. Powell	Newark, O	Best Peck Maggie Murphy	2 00
W. D. Whipps	Marion, O.	2d Best	1 00
J. L. Keckley	Marysville, O., R. R. 3	Best Peck Livingston	2 00
F. J. Coburn	Mechanicsburg, O., R. R. 3	2d Best	1 00
J. L. Deal	Marysville, O., R. R. 3	3d Best	50
J. L. Keckley	Marysville, O., R. R. 3	Best Peck Michigan Russet	2 00
A. H. Powell	Newark, O.	2d Best	1 00
W. D. Whipps	Marion, O.	3d Best	50
F. J. Coburn	Mechanicsburg, O., R. R. 3	Best Peck New Queen	2 00
M. J. & C. E. Leavitt.	Mechanicsburg, O.	2d Best	1 00
F. J. Coburn	Mechanicsburg, O., R. R. 3	Best Peck Potentate	2 00
J. L. Deal	Marysville, O., R. R. 3	2d Best	1 00
W. D. Whipps	Marion, O.	3d Best	50
A. H. Powell	Newark, O.	Best Peck Pride of Briton	2 00
F. J. Coburn	Mechanicsburg, O., R. R. 3	Best Peck New Daybreak	2 00
J. L. Deal	Marysville, O., R. R. 3	Best Peck Red Seneca Beauty	2 00
F. J. Coburn	Mechanicsburg, O., R. R. 3	2d Best	1 00
J. L. Keckley	Marysville, O., R. R. 3	3d Best	50
J. L. Keckley	Marysville, O., R. R. 3	Best Peck Rural New Yorker	2 00
F. J. Coburn	Mechanicsburg, O., R. R. 3	2d Best	1 00
Hilas E. Craig	Groveport, O.	Best Peck Sensation	2 00
Geo. W. Wildman	Springfield, O., R. R. 6	2d Best	1 00
J. L. Keckley	Marysville, O., R. R. 3	Best Peck Uncle Sam	2 00
J. L. Deal	Marysville, O., R. R. 3	2d Best	1 00
F. J Coburn	Mechanicsburg, O., R. R. 3	Best Peck Vermont Gold Coin	2 00
M. J. & C. E. Leavitt.	Mechanicsburg, O.	2d Best	1 00
F J Coburn	Mechanicsburg, O., R. R. 3	Best Peck White Ohio	2 00
M. J & C. E. Leavitt.	Mechanicsburg, O.	2d Best	1 00
W. D. Whipps	Marion, O.	3d Best	50
A. H. Powell	Newark, O.	Best Peck White Peach Blow	2 00
F. J. Coburn	Mechanicsburg, O., R. R. 3	Best Peck Whiton's White Mammoth	2 00
A. H. Powell	Newark, O.	2d Best	1 00
F. J. Coburn	Mechanicsburg, O., R. R. 3	Best Display Twenty-five Varieties Irish Potatoes	20 00
A. H. Powell	Newark, O.	2d Best	15 00
Hilas E. Craig	Groveport, O.	Best Peck Yellow Sweet Potatoes	2 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 00
T. D. Kalb	Groveport, O.	3d Best	50
Hilas E. Craig	Groveport, O.	Best Peck Red Sweet Potatoes	2 00
T. D. Kalb	Groveport, O.	2d Best	1 00
Hilas E. Craig	Groveport, O.	Best Peck White Sweet Potatoes	2 00
T. D Kalb	Groveport, O.	2d Best	1 00
A. H. Powell	Newark, O.	Best Peck Red Yams	2 00
Howard Powell	Newark, O.	2d Best	1 00
Hilas E. Craig	Groveport, O.	3d Best	50
Hilas E. Craig	Groveport, O.	Best Peck White Yams	2 00
T. D. Kalb	Groveport, O.	2d Best	1 00
Hilas E. Craig	Groveport, O.	Best Display Six Varieties of Sweet Potatoes and Yams	4 00
T. D. Kalb	Groveport, O.	2d Best	2 00
Geo. W. Wildman	Springfield, O., R. R. 6	Best 12 Carrots, Chanteny	2 00
A. H. Powell	Newark, O.	2d Best	1 00
R. H. Deal	Marysville, O., R. R. 3	3d Best	50
J. L. Keckley	Marysville, O., R. R. 3	Best 12 Carrots, Long Orange	2 00
W. D Whipps	Marion, O.	2d Best	1 00
Geo. W. Wildman	Springfield, O., R. R. 6	3d Best	50

FARM PRODUCTS—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
		POTATOES AND ROOTS—Concluded.	
Geo. W. Wildman	Springfield, O., R. R. 6	Best 12 Carrots, Oxheart	$2 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 00
A. H. Powell	Newark, O.	3d Best	50
J. L. Deal	Marysville, O., R. R. 3	Best 12 Carrots, White Belgian	2 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 00
Geo. W. Wildman	Springfield, O., R. R. 6	3d Best	50
Geo. W. Wildman	Springfield, O., R. R. 6	Best 12 Carrots, Yellow Belgian	2 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 00
A. H. Powell	Newark, O.	Best Display of Carrots	3 00
Geo. W. Wildman	Springfield, O., R. R. 6	2d Best	2 00
J. L. Deal	Marysville, O., R. R. 3	3d Best	1 00
J. L. Keckley	Marysville, O., R. R. 3	Best 12 Parsnips	2 00
I. B. Keckley	Marysville, O., R. R 3	2d Best	1 00
A. H. Powell	Newark, O.	3d Best	50
F. J. Coburn	Mechanicsburg, O., R. R. 3	Best 12 Roots Salsify	2 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 00
A. H. Powell	Newark, O.	3d Best	50
J. L. Keckley	Marysville, O., R. R. 3	Best 6 Beets, Eclipse	2 00
A. H. Powell	Newark, O.	2d Best	1 00
Howard Powell	Newark, O.	3d Best	50
Howard Powell	Newark, O.	Best 6 Beets, Columbian	2 00
J. L. Deal	Marysville, O., R. R. 3	2d Best	1 00
A. H. Powell	Newark, O.	3d Best	50
J. L. Keckley	Marysville, O., R. R. 3	Best 6 Beets, Crosby's Egyptian	2 00
Howard Powell	Newark, O.	2d Best	1 00
A H. Powell	Newark, O.	3d Best	50
J. L. Keckley	Marysville, O., R. R. 3	Best 6 Beets, Dark Blood Turnip	2 00
A. H Powell	Newark, O.	2d Best	1 00
Howard Powell	Newark, O.	3d Best	50
Albert Pearce	Sharon Ctr., O., R. R. 1	Best 6 Beets, Long Blood	2 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 00
J. L. Deal	Marysville, O., R. R. 3	3d Best	50
Albert Pearce	Sharon Ctr., O., R. R. 1	Best 6 Sugar Beets	2 00
Howard Powell	Newark, O.	2d Best	1 00
J. L. Deal	Marysville, O., R. R. 3	3d Best	50
H. M. Brown	Hillsboro, O.	Best 3 Beets, Long Red Mangel Wurzel	2 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 00
J L. Deal	Marysville, O., R. R. 3	3d Best	50
A. H. Powell	Newark, O.	Best 3 Beets, Long Yellow Mangel Wurzel	2 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 00
Geo. W. Wildman	Springfield, O., R. R. 6	3d Best	50
Howard Powell	Newark, O.	Best 3 Beets, Red Globe	2 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 00
A. H. Powell	Newark, O.	3d Best	50
J. L. Deal	Marysville, O., R. R. 3	Best 3 Beets, Yellow Globe	2 00
Albert Pearce	Sharon Ctr., O., R. R 1	2d Best	1 00
Geo. W. Wildman	Springfield, O., R. R. 6	3d Best	50
J. L. Keckley	Marysville, O., R. R. 3	Best Display Beets, 12 Varieties	2 00
Hilas E. Craig	Groveport, O.	2d Best	1 00
A. H. Powell	Newark, O.	3d Best	50
J. L. Deal	Marysville, O., R. R. 3	Best 6 Purple Kohlrabi	2 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 00
F. J. Coburn	Mechanicsburg, O., R. R. 3	3d Best	50
J. L. Keckley	Marysville, O., R. R. 3	Best 6 White Kohlrabi	2 00
Hilas E. Craig	Groveport, O.	2d Best	1 00
J. L. Deal	Marysville, O., R. R. 3	3d Best	50
Geo. W. Wildman	Springfield, O., R. R. 6	Best 6 Rutabagas	2 00
M. J & C. E. Leavitt	Mechanicsburg, O.	2d Best	1 00
R. H. Deal	Marysville, O., R. R. 3	3d Best	50
Howard Powell	Newark, O.	Best Peck Turnips, Purple Top	2 00
F. M. Whipps	Mt. Victory, O.	2d Best	1 00
Hilas E. Craig	Groveport, O.	3d Best	50
Howard Powell	Newark, O.	Best Peck Turnips, White Top	2 00
A. H. Powell	Newark, O.	2d Best	1 00
Hilas E. Craig	Groveport, O.	3d Best	50
J. L. Keckley	Marysville, O., R. R. 3	Best Peck Onions, Red Globe	2 00
F. M. Whipps	Mt. Victory, O.	2d Best	1 00
J. L. Keckley	Marysville, O., R. R. 3	Best Peck Onions, White Globe	2 00
F. M. Whipps	Mt. Victory, O.	2d Best	1 00
A. H. Powell	Newark, O.	Best Peck Onions, Yellow Globe Danvers	2 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 00
F. M. Whipps	Mt. Victory, O.	3d Best	50
Howard Powell	Newark, O.	Best Peck Onions, Red Wethersfield	2 00
Geo. W. Wildman	Springfield, O., R. R. 6	Best Peck Onions, Prizetaker	2 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 00
A. H. Powell	Newark, O.	3d Best	50
J. L. Keckley	Marysville, O., R. R. 3	Best Peck Onions, Potato	2 00
J. L. Deal	Marysville, O., R. R. 3	2d Best	1 00
W. D. Whipps	Marion, O.	3d Best	50
A. H. Powell	Newark, O.	Best Display Onions, 10 Varieties	2 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 00

FARM PRODUCTS—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
		VEGETABLES.	
Howard Powell	Newark, O.	Best Peck Acme Tomatoes	$2 00
A. H. Powell	Newark, O.	2d Best	1 00
Hilas E. Craig	Groveport, O.	3d Best	50
Howard Powell	Newark, O.	Best Peck Buckeye State Tomatoes	2 00
Geo. W. Wildman	Springfield, O., R. R. 6	2d Best	1 00
A. H. Powell	Newark, O.	3d Best	50
A. H. Powell	Newark, O.	Best Peck Beauty Tomatoes	2 00
Howard Powell	Newark, O.	2d Best	1 00
Hilas E. Craig	Groveport, O.	3d Best	50
Hilas E. Craig	Groveport, O.	Best Peck Dwarf Champion Tomatoes	2 00
Howard Powell	Newark, O.	2d Best	1 00
Geo. W. Wildman	Springfield, O., R. R. 6	Best Peck Favorite Tomatoes	2 00
Howard Powell	Newark, O.	2d Best	1 00
Hilas E. Craig	Groveport, O.	3d Best	50
A. H. Powell	Newark, O.	Best Peck Golden Queen Tomatoes	2 00
Hilas E. Craig	Groveport, O.	2d Best	1 00
Geo. W. Wildman	Springfield, O., R. R. 6	3d Best	50
A. H. Powell	Newark, O.	Best Peck New Globe Tomatoes	2 00
Howard Powell	Newark, O.	2d Best	1 00
Geo. W Wildman	Springfield, O., R. R. 6	3d Best	50
Howard Powell	Newark, O.	Best Peck Ponderosa Tomatoes	2 00
A. H. Powell	Newark, O.	2d Best	1 00
Hilas E. Craig	Groveport, O.	3d Best	50
Howard Powell	Newark, O.	Best Peck Stone Tomatoes	2 00
Geo. W. Wildman	Springfield, O., R. R. 6	2d Best	1 00
A. H. Powell	Newark, O.	3d Best	50
Howard Powell	Newark, O.	Best Peck Magnus Tomatoes	2 00
A. H. Powell	Newark, O.	2d Best	1 00
A. H. Powell	Newark, O.	Best Peck Enormous Tomatoes	2 00
Geo. W. Wildman	Springfield, O., R. R. 6	2d Best	1 00
Howard Powell	Newark, O.	Best Peck Jewel Tomatoes	2 00
A. H. Powell	Newark, O.	2d Best	1 00
Hilas E. Craig	Groveport, O.	Best Display 10 Varieties Tomatoes	8 00
Howard Powell	Newark, O.	2d Best	5 00
A. H. Powell	Newark, O.	3d Best	3 00
Howard Powell	Newark, O.	Best All Seasons Cabbage	2 00
A. H. Powell	Newark, O.	2d Best	1 00
J. L. Keckley	Marysville, O., R. R. 3	3d Best	50
Howard Powell	Newark, O.	Best Autumn King Cabbage	2 00
A. H. Powell	Newark, O.	2d Best	1 00
J. L. Keckley	Marysville, O., R. R. 3	3d Best	50
J. L. Keckley	Marysville, O., R. R. 3	Best Surehead Cabbage	2 00
Hilas E. Craig	Groveport, O.	2d Best	1 00
A. H. Powell	Newark, O.	3d Best	50
Howard Powell	Newark, O.	Best Flat Dutch Cabbage	2 00
A. H. Powell	Newark, O.	2d Best	1 00
J. L. Keckley	Marysville, O., R. R. 3	3d Best	50
A. H. Powell	Newark, O.	Best Drum Head Cabbage	2 00
Howard Powell	Newark, O.	2d Best	1 00
Hilas E. Craig	Groveport, O.	3d Best	50
M. J. & C. E. Leavitt	Mechanicsburg, O.	Best Red Dutch Cabbage	2 00
Howard Powell	Newark, O.	2d Best	1 00
A. H. Powell	Newark, O.	3d Best	50
Geo. W. Wildman	Springfield, O., R. R. 6	Best Winninstadt Cabbage	2 00
Hilas E. Craig	Groveport, O.	2d Best	1 00
Howard Powell	Newark, O.	3d Best	50
J. L. Keckley	Marysville, O., R. R. 3	Best Early Summer Cabbage	2 00
Howard Powell	Newark, O.	2d Best	1 00
A. H. Powell	Newark, O.	3d Best	50
A. H. Powell	Newark, O.	Best Danish Ball Cabbage	2 00
Howard Powell	Newark, O.	2d Best	1 00
Howard Powell	Newark, O.	Best Wakefield Cabbage	2 00
Geo. W. Wildman	Springfield, O., R. R. 6	Heaviest Head Cabbage	2 00
Howard Powell	Newark, O.	2d Heaviest	1 00
A. H. Powell	Newark, O.	3d Heaviest	50
Howard Powell	Newark, O.	Best White Plume Celery	2 00
Geo. W. Wildman	Springfield, O., R. R. 6	2d Best	1 00
Howard Powell	Newark, O.	Best Golden Self-Blanching Celery	2 00
A. H. Powell	Newark, O.	2d Best	1 00
Howard Powell	Newark, O.	Best Giant Pascal Celery	2 00
A. H Powell	Newark, O.	2d Best	1 00
A. H. Powell	Newark, O.	Best Display Celery, 5 Varieties	5 00
Howard Powell	Newark, O.	Largest 12 Peppers	2 00
Geo. W. Wildman	Springfield, O., R. R. 6	2d Largest	1 00
Harry Leibold	Delaware, O.	3d Largest	50
F. M. Whipps	Mt. Victory, O.	Best Boston Marrow Squash	2 00
M. J. & C. E. Leavitt	Mechanicsburg, O.	2d Best	1 00
A. H. Powell	Newark, O.	3d Best	50
Geo. W. Wildman	Springfield, O., R. R. 6	Best Cushaw Squash	2 00
A. H. Powell	Newark, O.	2d Best	1 00

FARM PRODUCTS—Continued.

VEGETABLES—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
A. H. Powell	Newark, O.	Best Essex Hybrid Squash	$2 00
Geo. W. Wildman	Springfield, O., R. R. 6	Best Hubbard Squash	2 00
Hilas E. Craig	Groveport, O.	2d Best	1 00
A. H. Powell	Newark, O.	Best Red Hubbard Squash	2 00
J. L. Keckley	Marysville, O., R. R. 3	Best Yellow Crookneck Squash	2 00
A. H. Powell	Newark, O.	2d Best	1 00
Geo. W. Wildman	Springfield, O., R. R. 6	3d Best	50
W. D. Whipps	Marion, O.	Best Yellow Scallop Squash	2 00
Geo. W Wildman	Springfield, O., R. R. 6	2d Best	1 00
J. L. Deal	Marysville, O., R. R. 3	3d Best	50
Hilas E Craig	Groveport, O.	Best Ford Hook Squash	2 00
A. H. Powell	Newark, O.	Best Pike's Peak Squash	2 00
M. J. & C. E. Leavitt.	Mechanicsburg, O.	2d Best	1 00
Geo. W. Wildman	Springfield, O., R. R. 6	3d Best	50
A. H. Powell.	Newark, O.	Best Marblehead Squash	2 00
Howard Powell	Newark, O.	2d Best	1 00
M. J. & C. E. Leavitt.	Mechanicsburg, O.	Heaviest Squash	3 00
Geo. W Wildman	Springfield, O., R. R. 6	2d Heaviest	2 00
Harry Leibold	Delaware, O.	3d Heaviest	1 00
Howard Powell	Newark, O.	Best Display Squashes and Pumpkins, 10 Varieties	10 00
Geo. W, Wildman	Springfield, O., R. R. 6	2d Best	5 00
A. H. Powell	Newark, O.	Best 3 Yellow Field Pumpkins	3 00
Hilas E. Craig	Groveport, O.	2d Best	2 00
Hilas E. Craig	Groveport, O.	Best 3 Sweet or Pie Pumpkins	3 00
A. H. Powell	Newark, O.	2d Best	2 00
T. D. Kalb	Groveport, O.	3d Best	1 00
Harry Leibold	Delaware, O.	Heaviest Pumpkin	3 00
Hilas E Craig	Groveport, O.	Best Black Diamond Watermelon	2 00
Hilas E. Craig	Groveport, O.	Best Kolb's Gem Watermelon	2 00
Hilas E. Craig	Groveport, O.	Best Ice Cream Watermelon	2 00
Hilas E. Craig	Groveport, O.	Best Sweet Heart Watermelon	2 00
T. D. Kalb	Groveport, O.	2d Best	1 00
Hilas E. Craig	Groveport, O.	Best Phinney's Early Watermelon	2 00
T. D. Kalb	Groveport, O.	2d Best	1 00
Hilas E Craig	Groveport, O	Best Rattlesnake Watermelon	2 00
T. D. Kalb	Groveport, O.	2d Best	1 00
Hilas E. Craig	Groveport, O.	Best Kleckley's Sweet Watermelon	2 00
Hilas E. Craig	Groveport, O.	Best Dark Icing Watermelon	2 00
Geo. W Wildman	Springfield, O., R. R. 6	Best Citron Watermelon	2 00
Hilas E. Craig	Groveport, O.	Heaviest Watermelon	3 00
T. D Kalb	Groveport, O.	2d Heaviest	2 00
Hilas E. Craig	Groveport, O.	Best Display Watermelons, 10 Varieties	15 00
Hilas E. Craig	Groveport, O.	Best Osage Muskmelon	2 00
Geo. W. Wildman	Springfield, O., R. R. 6	2d Best	1 00
A. H. Powell	Newark, O.	Best Montreal Muskmelon	2 00
Geo. W. Wildman	Springfield, O., R. R. 6	2d Best	1 00
A. H Powell	Newark, O.	Best Bay View Muskmelon	2 00
Geo. W. Wildman	Springfield, O., R. R. 6	Best Baltimore Muskmelon	2 00
Hilas E. Craig	Groveport, O	2d Best	1 00
Geo. W. Wildman	Springfield, O., R. R. 6	Best Banana Muskmelon	2 00
Hilas E. Craig	Groveport, O.	2d Best	1 00
A. H. Powell	Newark, O.	Best Tip Top Muskmelon	2 00
Hilas E. Craig	Groveport, O.	2d Best	1 00
A. H. Powell	Newark, O.	Best Hackensack Muskmelon	2 00
A. H. Powell	Newark, O.	Best Rockyford Muskmelon	2 00
Howard Powell	Newark, O.	Best Display Muskmelons, 10 Varieties	12 00
Geo. W. Wildman	Springfield, O., R. R. 6	2d Best	8 00
Hilas E. Craig	Groveport, O.	3d Best	4 00
A. H. Powell	Newark, O.	Best 12 Cucumbers	2 00
Howard Powell	Newark, O.	2d Best	1 00
Hilas E. Craig	Groveport, O.	3d Best	50
Geo. W. Wildman	Springfield, O., R. R. 6	Best Purple Egg Plants	2 00
A. H. Powell	Newark, O.	2d Best	1 00
Howard Powell	Newark, O.	3d Best	50
Hilas E. Craig	Groveport, O.	Best Lima Beans	2 00
J. L. Keckley	Marysville, O., R. R. 3	Best Marrowfat Beans	2 00
Harry Leibold	Delaware, O.	2d Best	1 00
F. M. Whipps	Mt. Victory, O.	3d Best	50
J. L. Keckley	Marysville, O., R. R. 3	Best Navy Beans	2 00
I. B. Keckley	Marysville, O., R. R. 3	2d Best	1 00
F. M. Whipps	Mt. Victory, O.	3d Best	50
I. B. Keckley	Marysville, O., R. R. 3	Best Golden Wax Beans	2 00
Harry Leibold	Delaware, O.	2d Best	1 00
J. L. Keckley'	Marysville, O., R. R. 3	3d Best	50
I. B. Keckley	Marysville, O., R. R. 3	Best White Kidney Beans	2 00
W. D. Whipps	Marion, O.	2d Best	1 00
J. L. Keckley	Marysville, O., R. R. 3	3d Best	50

FARM PRODUCTS—Continued.

VEGETABLES—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
J. L. Keckley	Marysville, O., R. R. 3	Best Red Kidney Beans	$2 00
F. M. Whipps	Mt. Victory, O.	2d Best	1 00
W. D. Whipps	Marion, O.	3d Best	50
Harry Leibold	Delaware, O.	Best Red Valentine Beans	2 00
J. L. Keckley	Marysville, O., R. R. 3	2d Best	1 00
J. L. Keckley	Marysville, O., R. R. 3	Best Display of Beans, 10 Varieties	5 00
Howard Powell	Newark, O.	2d Best	3 00
Harry Leibold	Delaware, O.	3d Best	1 50
Geo. W. Wildman	Springfield, O., R. R. 6	Best Display of Vegetables	25 00
A. H. Powell	Newark, O.	2d Best	15 00
J. L. Deal	Marysville, O., R. R. 3	3d Best	10 00

COUNTY EXHIBITS.

Name of Owner.	Postoffice.	Awards.	Amount.
A H. Powell	Newark, O.	Best Exhibit of Farm Products	$200 00
Geo. W Wildman	Springfield, O., R. R. 6	2d Best	180 00
J. L. Keckley	Marysville, O., R. R. 3	3d Best	160 00
Hilas E. Craig	Groveport, O.	4th Best	140 00
W. D. Whipps	Marion, O.	5th Best	120 00
M. J. & C. E. Leavitt.	Mechanicsburg, O.	6th Best	100 00

DAIRY PRODUCTS.

HOME DAIRY BUTTER.

Name of Owner.	Postoffice.	Awards.	Amount.
George Purdham	Columbus, O.	Best 10 Pound Package	$5 00
Mrs. Henry Bieber	Delaware, O.	2d Best	3 00
Mrs. Geo. Smith	Xenia, O.	Best 5 Single Pound Prints	5 00
George Purdham	Columbus, O.	2d Best	3 00

CREAMERY BUTTER.

Name of Owner.	Postoffice.	Score.	Amount.
W. J. Baugham	Wilmington, O.	97%	$14 00
C. H. Pettit	Reynoldsburg, O.	95½%	10 00
F. R. Hackman	West Jefferson, O.	95%	10 00
Sunbury Co-operative Creamery Co.	Sunbury, O.	95%	10 00
C. M. McConnell	Woodstock, O.	94½%	8 00
Horr Bros.	Leesburg, O.	94%	8 00
Frye Condensing and Caromel Co.	Lexington, O.	92%	4 00
William Paxton	Windsor, O.	92%	4 00
J. B. DeWolf	Johnstown, O.	91%	2 00

DISPLAY CREAMERY BUTTER.

Name of Owner.	Postoffice.	Awards.	Amount.
Sunbury Co-operative Creamery Co.	Sunbury, O.	Best Display Creamery Butter	Silver Cup
J. M Connell	Reynoldsburg, O.	2d Best	Sil. Med.

FARM PRODUCTS—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.

CHEESE.

Name of Owner.	Postoffice.	Awards.	Amount.
Fred Hadler	Colby, Wis., R. R. 1	2d Best Flat Cheese	$4 00

BEES AND HONEY.

Name of Owner.	Postoffice.	Awards.	Amount.
M. J. & C. E. Leavitt.	Mechanicsburg, O.	Best Display Comb Honey	$15 00
Jessie Goodrich	Powell, O.	2d Best	8 00
M. J. & C. E. Leavitt.	Mechanicsburg, O.	Best Case White Clover Comb	3 00
Jessie Goodrich	Powell, O	2d Best	2 00
Jessie Goodrich	Powell, O.	Best Display Extracted Honey	15 00
M. J. & C. E. Leavitt.	Mechanicsburg, O.	2d Best	8 00
Jessie Goodrich	Powell, O.	Best 6 Jars, Quart Size, Extracted Honey	3 00
M. J. & C. E. Leavitt.	Mechanicsburg, O.	2d Best	2 00
Jessie Goodrich	Powell, O.	Best 6 Jars, Pint Size, Extracted Honey.	2 00
M. J. & C. E. Leavitt.	Mechanicsburg, O.	2d Best	1 00
M. J. & C. E. Leavitt.	Mechanicsburg, O.	Best Display Candied Honey	5 00
Jessie Goodrich	Powell, O.	2d Best	3 00
M. J. & C. E. Leavitt.	Mechanicsburg, O.	Best Display, Beeswax	2 00
Jessie Goodrich	Powell, O.	2d Best	1 00
M. J. & C. E. Leavitt.	Mechanicsburg, O.	Best Nucleus Italian Bees	3 00
Chester Leavitt	Mechanicsburg, O.	2d Best	2 00
Chester Leavitt	Mechanicsburg, O.	Best Nucleus Carniolan Bees	3 00
M. J. & C. E. Leavitt.	Mechanicsburg, O.	2d Best	2 00
M. J. & C. E. Leavitt.	Mechanicsburg, O.	Best Display Comb Foundation	2 00
Jessie Goodrich	Powell, O.	2d Best	1 00
M. J. & C. E. Leavitt.	Mechanicsburg, O.	Largest and Finest Display Honey	20 00
Jessie Goodrich	Powell, O.	2d Largest and Finest	10 00

MAPLE PRODUCTS.

Name of Owner.	Postoffice.	Awards.	Amount.
D. Gwynn Coyner	Lyndon, O.	Best Gallon Maple Syrup	$3 00
Lyman Strong	Huntsburg, O.	2d Best	2 00
Lyman Strong	Huntsburg, O.	Best 3 Bricks Maple Sugar	3 00
F. I. Bartholomew	Huntsburg, O.	2d Best	2 00
F. I. Bartholomew	Huntsburg, O.	Best Design in Maple Sugar	2 00
Lyman Strong	Huntsburg, O.	2d Best	1 00
D. Gwynn Coyner	Lyndon, O.	Best 5 Pounds Grained Maple Sugar	3 00
F. I. Bartholomew	Huntsburg, O.	2d Best	2 00
Lyman Strong	Huntsburg, O.	Best Display Maple Cream	3 00
F. I. Bartholomew	Huntsburg, O.	2d Best	2 00
F. I. Bartholomew	Huntsburg, O.	Best, Largest and Most Attractive Display of Maple Products, One County .	20 00
D. Gwynn Coyner	Lyndon, O.	2d Best	10 00
D. Gwynn Coyner	Lyndon, O.	Best, Largest and Most Attractive Display of Maple Products by Dealer	Medal.

SEVENTH DEPARTMENT—HORTICULTURAL PRODUCTS.

WM. MILLER, Member in Charge.

SUMMER, FALL AND WINTER APPLES.

Name of Owner.	Postoffice.	Awards.	Amount.
W. W. Farnsworth	Waterville, O.	Best Three Varieties Summer for Market, Grown North of Columbus	$3 00
C. W. Counter	Toledo, O.	2d Best	1 00
U. T. Cox	Rockwood, O.	Best Three Varieties Summer for Market, Grown South of Columbus	3 00
E. T. Cox	Rockwood, O.	2d Best	1 00
W. W. Farnsworth	Waterville, O.	Best Three Varieties Fall for Market, Grown North of Columbus	3 00
M. J. Persing	Clyde, O.	2d Best	1 00
E. G. Cox	Rockwood, O.	Best Three Varieties Fall for Market, Grown South of Columbus	3 00
U. T. Cox	Rockwood, O.	2d Best	1 00
W. W. Farnsworth	Waterville, O.	Best Six Varieties Winter for Market, Grown North of Columbus	5 00
H. W. Schmilkons	North Amherst, O.	2d Best	3 00
E. G. Cox	Rockwood, O.	Best Six Varieties Winter for Market, Grown South of Columbus	5 00
U. T. Cox	Rockwood, O.	2d Best	3 00
W. W. Farnsworth	Waterville, O.	Best Collection 12 Varieties, Summer, Fall and Winter, for Market, Grown North of Columbus	8 00
R. A. Gill	Port Clinton, O.	2d Best	5 00
E. G. Cox	Rockwood, O.	Best Collection 12 Varieties, Summer, Fall and Winter, for Market, Grown South of Columbus	5 00 8 00
U. T. Cox	Rockwood, O.	2d Best	5 00
M. J. Persing	Clyde, O.	Best Variety Summer Dessert	2 00
Lewis Hunt	Rockwood, O., R. R. 1	2d Best	1 00
U. T. Cox	Rockwood, O.	Best Variety Fall Dessert	2 00
M. J. Persing	Clyde, O.	2d Best	1 00
W. W. Farnsworth	Waterville, O.	Best Variety Winter Dessert	2 00
U. T. Cox	Rockwood, O.	2d Best	1 00
R. A. Gill	Port Clinton, O.	Best Collection Six Varieties, Summer, Fall and Winter, Dessert and Culinary, Grown North of Columbus	6 00
M. J. Persing	Clyde, O.	2d Best	3 00
U. T. Cox	Rockwood, O.	Best Collection Six Varieties, Summer, Fall and Winter, Dessert and Culinary, Grown South of Columbus	6 00
E. G. Cox	Rockwood, O.	2d Best	3 00
E. G. Cox	Rockwood, O.	Best Variety Fall, Size and Beauty to Rule	2 00
Lewis Hunt	Rockwood, O., R. R. 1	2d Best	1 00
E. G. Cox	Rockwood, O.	Best Variety Winter, Size and Beauty to Rule	2 00
Lewis Hunt	Rockwood, O., R. R. 1	2d Best	1 00
E. G. Cox	Rockwood, O.	Best Collection Six Varieties, Summer, Fall and Winter, Size and Beauty to Rule	6 00
Lewis Hunt	Rockwood, O., R. R. 1	2d Best	3 00
W. W. Farnsworth	Waterville, O.	Best Display 25 Varieties, Summer, Fall, and Winter, Dessert, Culinary and Market, Grown North of Columbus	20 00
R. A. Gill	Port Clinton, O.	2d Best	10 00
U. T. Cox	Rockwood, O.	Best Display 25 Varieties, Summer, Fall and Winter, Dessert, Culinary and Market, Grown South of Columbus	20 00
E. G. Cox	Rockwood, O.	2d Best	10 00
E. G. Cox	Rockwood, O.	Best Bushel Box of Apples, Fruit, Package and Packing to be Considered	5 00
U. T. Cox	Rockwood, O.	2d Best	3 00

HORTICULTURAL PRODUCTS—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
		PLATE APPLES—SUMMER AND FALL.	
C. W. Counter	Toledo, O.	Best Plate Alexander	$2 00
M. I. Shively	Chillicothe, O., R. R. 3	Best Plate Benoni	2 00
John Cornish	Madisonville, O., R. R. 10	2d Best	1 00
William Kiefabor	Musselman, O.	Best Plate Cayuga Red Streak	2 00
W. H. West	Chillicothe, O., R. R. 5	2d Best	1 00
W. W. Farnsworth	Waterville, O.	Best Plate Chenango Strawberry	2 00
C. W. Counter	Toledo, O.	2d Best	1 00
R. A. Gill	Port Clinton, O.	Best Plate Duchess of Oldenburg	2 00
W. W. Farnsworth	Waterville, O.	2d Best	1 00
E G. Cox	Rockwood, O.	Best Plate Fall Pippin	2 00
U T. Cox	Rockwood O.	2d Best	1 00
Fred Hutchinson	Clyde, O.	Best Plate Jeffries	2 00
C. W. Counter	Toledo, O.	2d Best	1 00
Mrs. T. S. Johnson	Port Clinton, O.	Best Plate Gravenstein	2 00
W. W Farnsworth	Waterville, O.	Best Plate Lowell	2 00
C. W. Counter	Toledo, O.	2d Best	1 00
Lewis Hunt	Rockwood, O., R. R. 1	Best Plate Maiden's Blush	2 00
John Cornish	Madisonville, O., R. R. 10.	2d Best	1 00
W. W. Farnsworth	Waterville, O.	Best Plate Ohio Nonpareil	2 00
C. W. Counter	Toledo, O.	2d Best	1 00
W. W. Farnswosth	Waterville, O.	Best Plate Porter	2 00
Fred Hutchinson	Clyde, O.	2d Best	1 00
C. W. Counter	Toledo, O.	Best Plate Red Astrachan	2 00
M. I. Shively	Chillicothe, O.	2d Best	1 00
U. T. Cox	Rockwood, O.	Best Plate St. Lawrence	2 00
E. G. Cox	Rockwood, O.	2d Best	1 00
R. A. Gill	Port Clinton, O.	Best Plate Sweet Bough	2 00
Mrs. T. S. Johnson	Port Clinton, O.	2d Best	1 00
E. G. Cox	Rockwood, O.	Best Plate Wealthy	2 00
Wm. Kiefabor	Musselman, O.	2d Best	1 00
R. A. Gill	Port Clinton, O.	Best Plate Yellow Transparent	2 00
E. G. Cox	Rockwood, O.	2d Best	1 00
U. T. Cox	Rockwood, O.	Best New Seedling	2 00
Lewis Hunt	Rockwood, O.	2d Best	1 00
		WINTER APPLES.	
Harry Leibold	Delaware, O.	Best Plate Bailey's Sweet	2 00
W. H. West	Chillicothe, O.	2d Best	1 00
M. I. Shively	Chillicothe, O.	Best Plate Baltimore	2 00
Wm. Paxton	Windsor, O.	2d Best	1 00
Mrs. T. S. Johnson	Port Clinton, O.	Best Plate Banana	2 00
W. W. Farnsworth	Waterville, O.	2d Best	1 00
Fred Hutchinson	Clyde, O.	Best Plate Baldwin	2 00
John Cornish	Madisonville, O.	2d Best	1 00
Fred Hutchinson	Clyde, O.	Best Plate Belmont	2 00
M. J. Persing	Clyde, O.	2d Best	1 00
E. G. Cox	Rockwood, O.	Best Plate Ben Davis	2 00
Lewis Hunt	Rockwood, O.	2d Best	1 00
Mrs. T. S. Johnson	Port Clinton, O.	Best Plate Dominie	2 00
M. J. Persing	Clyde, O.	Best Plate Fallawater	2 00
U. T. Cox	Rockwood, O.	2d Best	1 00
H. W. Schmitkaus	North Amherst, O.	Best Plate Fameuse	2 00
W. W. Farnsworth	Waterville, O.	2d Best	1 00
C. W. Counter	Toledo, O.	Best Plate Greenville	2 00
E. G. Cox	Rockwood, O.	Best Plate Grimes' Golden	2 00
John Cornish	Madisonville, O.	2d Best	1 00
W. W. Farnsworth	Waterville, O.	Best Plate Hendrick's Sweet	2 00
C M Counter	Toledo, O.	2d Best	1 00
C. W. Counter	Toledo, O.	Best Plate Hubbardston	2 00
W W. Farnsworth	Waterville, O.	Best Plate Jonathan	2 00
U. T. Cox	Rockwood, O.	2d Best	1 00
Fred Hutchinson	Clyde, O.	Best Plate King (Tompkins Co.)	2 00
M. J. Persing	Clyde, O.	2d Best	1 00
Wm. Kiefabor	Musselman, O.	Best Plate Limber Twig	2 00
C. L. Hizar	Lebanon, O.	2d Best	1 00
W. W. Farnsworth	Waterville, O.	Best Plate McIntosh	2 00
C. W. Counter	Toledo, O.	2d Best	1 00
Harry Liebold	Delaware, O.	Best Plate Minkler	2 00
W. W. Farnsworth	Waterville, O.	Best Plate Northern Spy	2 00
E. G. Cox	Rockwood, O.	2d Best	1 00
W. H. West	Chillicothe, O.	Best Plate Paradise Winter Sweet	2 00
W. W. Farnsworth	Waterville, O.	2d Best	1 00
W. W. Farnsworth	Waterville, O.	Best Plate Peek's Pleasant	2 00
C. W. Counter	Toledo, O.	2d Best	1 00
W. W. Farnsworth	Waterville, O.	Best Plate Rambo	2 00
C. W. Counter	Toledo, O.	2d Best	1 00

HORTICULTURAL PRODUCTS—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
		PLATE APPLES—WINTER.	
E G. Cox	Rockwood, O	Best Plate Raule's Janet	$2 00
U. T. Cox	Rockwood, O	2d Best	1 00
W. W Farnsworth	Waterville, O	Best Plate Red Canada	2 00
C. W. Counter	Toledo, O	2d Best	1 00
W. W. Farnsworth	Waterville, O	Best Plate Rhode Island Greening	2 00
C. W. Counter	Toledo, O	2d Best	1 00
E. G. Cox	Rockwood, O	Best Plate Rome Beauty	2 00
U. T. Cox	Rockwood, O	2d Best	1 00
E G. Cox	Rockwood, O	Best Plate Roxbury Russet	2 00
W. H. West	Chillicothe, O	2d Best	1 00
W. W. Farnsworth	Waterville, O	Best Plate Seek-no-Farther	2 00
C. W. Counter	Toledo, O	2d Best	1 00
E G Cox	Rockwood, O	Best Plate Smith's Cider	2 00
Lewis Hunt	Rockwood, O	2d Best	1 00
W W. Farnsworth	Waterville, O	Best Plate Smoke House	2 00
C. W. Counter	Toledo, O	2d Best	1 00
E. G. Cox	Rockwood, O	Best Plate Stark	2 00
U T. Cox	Rockwood, O	2d Best	1 00
C. W. Counter	Toledo, O	Best Plate Sutton Beauty	2 00
W. W. Farnsworth	Waterville, O	2d Best	1 00
W. W Farnsworth	Waterville, O	Best Plate Talman Sweet	2 00
C. W. Counter	Toledo, O	2d Best	1 00
E G. Cox	Rockwood, O	Best Plate Wagener	2 00
U. T. Cox	Rockwood, O	2d Best	1 00
W. H. West	Chillicothe, O	Best Plate White Pippin	2 00
H W. Schmitkons	North Amherst, O	2d Best	1 00
M I Shively	Chillicothe, O	Best Plate Willow Twig	2 00
E. G. Cox	Rockwood, O	Best Plate Wine Sap	2 00
U T. Cox	Rockwood, O	2d Best	1 00
U T. Cox	Rockwood, O	Best Plate Wolf River	2 00
E. G. Cox	Rockwood, O	2d Best	1 00
U. T Cox	Rockwood, O	Best Plate York Imperial	2 00
E. G. Cox	Rockwood, O	2d Best	1 00
		CRAB APPLES.	
Fred Hutchinson.	Clyde, O	Best Plate Quaker Beauty	2 00
Fred Hutchinson.	Clyde, O	Best Plate Hyslop	2 00
H. W. Schmitkons	North Amherst, O	Best Plate Transcendant	2 00
M. J. Persing	Clyde, O	2d Best	1 00
M. I. Shively	Chillicothe, O	Best Plate Whitney's No. 20	2 00
M. J. Persing	Clyde, O	2d Best	1 00

PEACHES, QUINCES AND PLUMS.

Name of Owner.	Postoffice.	Awards.	Amount.
		PEACHES.	
C. W. Counter	Toledo, O	Best Five Varieties, Dessert and Culinary Qualities Considered	$5 00
W. W. Farnsworth	Waterville, O	2d Best	3 00
Mrs. T. S. Johnson	Port Clinton, O	Best Five Varieties, Market Qualities Considered	5 00
W. W. Farnsworth	Waterville, O	2d Best	3 00
C. W. Counter	Toledo, O	Best Collection, Eight Varieties, Dessert, Culinary and Market Qualities Considered	7 00
W. W. Farnsworth	Waterville, O	2d Best	5 00
W. W. Farnsworth	Waterville, O	Best Collection, Twelve Varieties, Dessert, Culinary and Market Qualities Considered	10 00
C. W. Counter	Toledo, O	2d Best	7 00
Fred Hutchinson	Clyde, O	Best Plate Banner	2 00
W. W. Farnsworth	Waterville, O	2d Best	1 00
M. I. Shively	Chillicothe, O	Best Plate Beer's Smock	2 00
Mrs. T. S. Johnson	Port Clinton, O.	Best Plate Briner	2 00
W. W. Farnsworth	Waterville, O	2d Best	1 00
C. W. Counter	Toledo, O	Best Plate Chavis' Choice	2 00
Fred Hutchinson	Clyde, O	2d Best	1 00
W. W. Farnsworth	Waterville, O	Best Plate Carman	2 00
C. W. Counter	Toledo, O	2d Best	1 00
Mrs. T. S. Johnson	Port Clinton, O	Best Plate Champion	2 00
W. W. Farnsworth	Waterville, O	2d Best	1 00

HORTICULTURAL PRODUCTS—Continued.

Name of Owner.	Postoffice.	Awards.	Amount
		PEACHES.	
Mrs. T. S. Johnson...	Port Clinton, O.......	Best Plate Captain Ede................	$2 00
R. A. Gill...........	Port Clinton, O.......	2d Best..............................	1 00
Fred Hutchinson.....	Clyde, O.............	Best Plate Crawford's Early...........	2 00
C. W. Counter.......	Toledo, O............	2d Best..............................	1 00
W. W. Farnsworth...	Waterville, O.........	Best Plate Crawford's Late............	2 00
Mrs. T. S. Johnson....	Port Clinton, O.......	2d Best..............................	1 00
M. J Persing.........	Clyde, O.............	Best Plate Crosby.....................	2 00
Wm. Kiefabor.......	Musselman, O........	2d Best..............................	1 00
Mrs. T. S. Johnson...	Port Clinton, O.......	Best Plate Early Toledo...............	2 00
W. W. Farnsworth...	Waterville, O.........	2d Best..............................	1 00
Wm Kiefabor.......	Musselman,-O........	Best Plate Elberta....................	2 00
M. I. Shively........	Chillicothe, O........	2d Best..............................	1 00
C. W. Counter.......	Toledo, O............	Best Plate Emma......................	2 00
W. W. Farnsworth...	Waterville, O.........	Best Plate Foster.....................	2 00
C. W. Counter.......	Toledo, O............	2d Best..............................	1 00
Mrs. T. S. Johnson...	Port Clinton, O.......	Best Plate Fitzgerald..................	2 00
C. W. Counter.......	Toledo, O............	2d Best..............................	1 00
C. W. Counter.......	Toledo, O............	Best Plate Kalamazoo..................	2 00
W. W. Farnsworth...	Waterville, O.........	2d Best..............................	1 00
Wm. Kiefabor.......	Musselman, O........	Best Plate Lemon Free.................	2 00
Mrs. T. S. Johnson...	Port Clinton, O.......	2d Best..............................	1 00
R. A. Gill...........	Port Clinton, O.......	Best Plate Lewis' Seedling.............	2 00
W. W. Farnsworth...	Waterville, O.........	2d Best..............................	1 00
C. W. Counter.......	Toledo, O............	Best Plate Matthews..................	2 00
W. W. Farnsworth...	Waterville, O.........	2d Best..............................	1 00
Mrs. T. S. Johnson...	Port Clinton, O.......	Best Plate Mountain Rose.............	2 00
W. W. Farnsworth...	Waterville, O.........	2d Best..............................	1 00
Mrs. T. S. Johnson...	Port Clinton, O.......	Best Plate New Prolific...............	2 00
R. A. Gill...........	Port Clinton, O.......	2d Best..............................	1 00
C. W. Counter.......	Toledo, O............	Best Plate Niagara....................	2 00
W. W. Farnsworth...	Waterville, O.........	2d Best..............................	1 00
C. W. Counter.......	Toledo, O............	Best Plate Old Mixon Free............	2 00
Mrs. T. S. Johnson....	Port Clinton, O.......	2d Best..............................	1 00
Wm. Kiefabor.......	Musselman, O........	Best Plate Smock Free................	2 00
Mrs. T. S. Johnson...	Port Clinton, O.......	2d Best..............................	1 00
Mrs. T. S. Johnson...	Port Clinton, O.......	Best Plate Stump.....................	2 00
		QUINCES	
E. V. Rhoads, Mgr...	St. Paris, O..........	Best Plate Rea's Mammoth............	2 00
Fred Hutchinson.....	Clyde, O.............	2d Best..............................	1 00
M. J. Persing........	Clyde, O.............	Best Plate Orange....................	2 00
E. V. Rhoads, Mgr...	St. Paris, O..........	2d Best..............................	1 00
E V. Rhoads, Mgr...	St. Paris, O..........	Best Peck Quinces....................	2 00
		PLUMS.	
W. W. Farnsworth...	Waterville, O.........	Best Five Varieties, Dessert and Culinary Qualities Considered................	5 00
R. A. Gill...........	Port Clinton, O.......	2d Best..............................	3 00
W. W. Farnsworth...	Waterville, O.........	Best Five Varieties, Market Qualities Considered........................	5 00
R. A. Gill...........	Port Clinton, O.......	2d Best..............................	3 00
W. W. Farnsworth...	Waterville, O.........	Best Collection Ten Varieties, Dessert, Culinary and Market Qualities Considered........................	8 00
R. A. Gill...........	Port Clinton, O.......	2d Best..............................	5 00
Mrs. E. A. Brennaman	Camp Chase, O........	Best Plate Bradshaw..................	2 00
W. W. Farnsworth...	Waterville, O.........	2d Best..............................	1 00
R. A. Gill...........	Port Clinton, O.......	Best Plate Coe's Golden Drop..........	2 00
C W. Counter.......	Toledo, O............	Best Plate Duane's Purple.............	2 00
R. A. Gill...........	Port Clinton, O.......	2d Best..............................	1 00
Fred Hutchinson.....	Clyde, O.............	Best Plate French Damson.............	2 00
W. W. Farnsworth...	Waterville, O.........	2d Best..............................	1 00
W. W. Farnsworth...	Waterville, O.........	Best Plate Grand Duke................	2 00
C. W. Counter.......	Toledo, O............	2d Best..............................	1 00
R. A. Gill...........	Port Clinton, O.......	Best Plate Gueii......................	2 00
W. W. Farnsworth...	Waterville, O.........	2d Best..............................	1 00
W. W. Farnsworth...	Waterville, O.........	Best Plate German Prune..............	2 00
R. A. Gill...........	Port Clinton, O.......	2d Best..............................	1 00
R. A Gill...........	Port Clinton, O.......	Best Plate Lombard...................	2 00
W. W. Farnsworth...	Waterville, O.........	2d Best..............................	1 00
C. W. Counter.......	Toledo, O............	Best Plate Monarch...................	2 00
W. W. Farnsworth...	Waterville, O.........	2d Best..............................	1 00
R. A. Gill...........	Port Clinton, O.......	Best Plate Moore's Artic..............	2 00
Mrs. T. S. Johnson...	Port Clinton, O.......	2d Best..............................	1 00
R. A. Gill...........	Port Clinton, O.......	Best Plate Pond's Seedling............	2 00
W. W. Farnsworth...	Waterville, O.........	2d Best..............................	1 00

HORTICULTURAL PRODUCTS—Continued.

Name of Owner	Postoffice.	Awards.	Amount.
		PLUMS.	
W. W. Farnsworth	Waterville, O	Best Plate Reine Claude	$2 00
R. A. Gill	Port Clinton, O	2d Best	1 00
W. H. West	Chillicothe, O	Best Plate Shropshire	2 00
J B. Stewart	Thornville, O	2d Best	1 00
R. A. Gill	Port Clinton, O	Best Plate Union Purple	2 00
Mrs. T. S. Johnson	Port Clinton, O	2d Best	1 00
R. A. Gill	Port Clinton, O	Best Plate Yellow Egg	2 00
W. W. Farnsworth	Waterville, O	2d Best	1 00

PEARS.

Name of Owner.	Postoffice.	Awards.	Amount.
Mrs T. S. Johnson	Port Clinton, O	Best Three Varieties Summer	$3 00
W W. Farnsworth	Waterville, O	2d Best	1 50
C. W. Counter	Toledo, O	Best Three Varieties Fall	3 00
Mrs. T. S. Johnson	Port Clinton, O	2d Best	1 50
W. W. Farnsworth	Waterville, O	Best Three Varieties Winter	3 00
C. W. Counter	Toledo, O	2d Best	1 50
C. W. Counter	Toledo, O	Best Five Varieties, Dessert and Culinary Qualities Considered	5 00
W. W. Farnsworth	Waterville, O	2d Best	3 00
E. V. Rhoads, Mgr	St. Paris, O	Best Five Varieties Market Qualities Considered	5 00
W. W. Farnsworth	Waterville, O	2d Best	3 00
Mrs. T. S. Johnson	Port Clinton, O	Best Collection Fifteen Varieties, Dessert, Culinary and Market Qualities Considered	12 00
W. W. Farnsworth	Waterville, O	2d Best	8 00
David K. Bell	Rochester, N. Y	Best Plate Anjou	2 00
E. V. Rhoads, Mgr	St. Paris, O	2d Best	1 00
David K. Bell	Rochester, N. Y	Best Plate Bartlett	2 00
W. W. Farnsworth	Waterville, O	2d Best	1 00
R. A. Gill	Port Clinton, O	Best Plate Beurre Bosc	2 00
Mrs. T. S. Johnson	Port Clinton, O	2d Best	1 00
Mrs. T. S. Johnson	Port Clinton, O	Best Plate Beurre Clairgeau	2 00
David K. Bell	Rochester, N. Y	2d Best	1 00
U. T. Cox	Rockwood, O	Best Plate Buffom	2 00
C. W. Counter	Toledo, O	2d Best	1 00
Mrs. T. S. Johnson	Port Clinton, O	Best Plate Clapp's Favorite	2 00
Fred Hutchinson	Clyde, O	2d Best	1 00
C. W. Counter	Toledo, O	Best Plate Doyenne Boussock	2 00
W. W. Farnsworth	Waterville, O	2d Best	1 00
W. W. Farnsworth	Waterville, O	Best Plate Duchess	2 00
C. W. Counter	Toledo, O	2d Best	1 00
David K. Bell	Rochester, N. Y	Best Plate Flemish Beauty	2 00
R. A. Gill	Port Clinton, O	2d Best	1 00
W. W. Farnsworth	Waterville, O	Best Plate Frederick Clapp	2 00
C. W. Counter	Toledo, O	2d Best	1 00
David K. Bell	Rochester, N. Y	Best Plate Howell	2 00
W. W. Farnsworth	Waterville, O	2d Best	1 00
Fred Hutchinson	Clyde, O	Best Plate Keiffer	2 00
E. V. Rhoads, Mgr	St. Paris, O	2d Best	1 00
W. W. Farnsworth	Waterville, O	Best Plate Kirtland	2 00
C. W. Counter	Toledo, O	2d Best	1 00
W. W. Farnsworth	Waterville, O	Best Plate Lawrence	2 00
C. W. Counter	Toledo, O	2d Best	1 00
E. V. Rhoads, Mgr	St. Paris, O	Best Plate Louise Bonne	2 00
Mrs. T. S. Johnson	Port Clinton, O	2d Best	1 00
E. G. Cox	Rockwood, O	Best Plate Seckel	2 00
E. V. Rhoads, Mgr	St. Paris, O	2d Best	1 00
W. W. Farnsworth	Waterville, O	Best Plate Sheldon	2 00
Fred Hutchinson	Clyde, O	2d Best	1 00
C. W. Counter	Toledo, O	Best Plate Tilson	2 00
W. W. Farnsworth	Waterville, O	2d Best	1 00
R. A. Gill	Port Clinton, O	Best Plate Vermont Beauty	2 00
Mrs. T. S. Johnson	Port Clinton, O	2d Best	1 00
C. W. Counter	Toledo, O	Best Plate Winter Nelis	2 00
W. W. Farnsworth	Waterville, O	2d Best	1 00

HORTICULTURAL PRODUCTS—Continued.

GRAPES.

Name of Owner.	Postoffice.	Awards.	Amount.
W. H. West	Chillicothe, O	Best Six Varieties, Table Qualities Considered	$5 00
W. W. Farnsworth	Waterville, O	2d Best	3 00
W. W. Farnsworth	Waterville, O	Best Six Varieties, Market Qualities Considered	5 00
W. H. West	Chillicothe, O	2d Best	3 00
W. W. Farnsworth	Waterville, O	Best Collection, Ten Varieties	8 00
W. H. West	Chillicothe, O	2d Best	4 00
W. W. Farnsworth	Waterville, O	Best Collection, Twenty Varieties	12 00
W. H. West	Chillicothe, O	2d Best	8 00
W. H. West	Chillicothe, O	Best Plate Brighton	2 00
W. W. Farnsworth	Waterville, O	Best Plate Campbell's Early	2 00
C. W. Counter	Toledo, O	2d Best	1 00
W. H. West	Chillicothe, O	Best Plate Catawba	2 00
W. H. West	Chillicothe, O	Best Plate Concord	2 00
W. H. West	Chillicothe, O	Best Plate Delaware	2 00
Fred Hutchinson	Clyde, O	2d Best	1 00
W. W. Farnsworth	Waterville, O	Best Plate Empire State	2 00
C. W. Counter	Toledo, O	2d Best	1 00
W. W. Farnsworth	Waterville, O	Best Plate Green Mountain	2 00
C. W. Counter	Toledo, O	2d Best	1 00
Mrs. T. S. Johnson	Port Clinton, O	Best Plate Ives	2 00
W. W. Farnsworth	Waterville, O	2d Best	1 00
Mrs. T. S. Johnson	Port Clinton, O	Best Plate Moore's Diamond	2 00
R. A. Gill	Port Clinton, O	2d Best	1 00
Fred Hutchinson	Clyde, O	Best Plate Moore's Early	2 00
Fred Hutchinson	Clyde, O	Best Plate Niagara	2 00
M. J. Persing	Clyde, O	2d Best	1 00
W. H. West	Chillicothe, O	Best Plate Norton's Virginia	2 00
W. H. West	Chillicothe, O	Best Plate Pocklington	2 00
Mrs. T. S. Johnson	Port Clinton, O	Best Plate Ulster	2 00
W. H. West	Chillicothe, O	Best Plate Wilder	2 00
W. H. West	Chillicothe, O	Best Plate Woodruff Red	2 00
Wm. Kiefabor	Musselman, O	2d Best	1 00
C. W. Counter	Toledo, O	Best Plate Worden	2 00
W. W. Farnsworth	Waterville, O	2d Best	1 00

COUNTY FRUITS.

Name of Owner.	Postoffice.	Awards.	Amount.
R. A. Gill	Port Clinton, O	Best County Exhibit of One Hundred Plates of Fruits of Various Kinds	$100 00
C. W. Counter	Toledo, O	2d Best	85 00
Fred Hutchinson and M. J. Persing	Clyde, O	3d Best	65 00
M. I. Shively	Chillicothe, O	4th Best	50 00

PLANTS AND FLOWERS.

Name of Owner.	Postoffice.	Awards.	Amount.
		DECORATIVE AND FLOWERING PLANTS.	
Mrs. E. L. Charles	Columbus, O	Best Collection of Palms	$15 00
Mrs. E. L. Charles	Columbus, O	Best Single Specimen Palm	5 00
Mrs. T. H. Kennedy	Columbus, O	2d Best	3 00
Mrs. E. L. Charles	Columbus, O	Best Collection Ferns and Lycopodium	10 00
Mrs. E. L. Charles	Columbus, O	Best Collection Variegated Foliage Plants	10 00
Mrs. T. H. Kennedy	Columbus, O	2d Best	5 00
Mrs. E. L. Charles	Columbus, O	Best Collection Stove and Greenhouse Plants	20 00
Mrs. E. J. Tyne	Columbus, O	2d Best	10 00
Mrs. T. H. Kennedy	Columbus, O	Best Collection Begonias	8 00
Mrs. E. L. Charles	Columbus, O	2d Best	4 00
Mrs. E. L. Charles	Columbus, O	Best Collection Cannas	10 00
Mrs. E. L. Charles	Columbus, O	Best Collection Geraniums	8 00
Mrs. T. H. Kennedy	Columbus, O	2d Best	4 00
Mrs. E. L. Charles	Columbus, O	Best Collection Asters	5 00

HORTICULTURAL PRODUCTS—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
		DECORATIVE AND FLOWERING PLANTS.	
Mrs E. L. Charles	Columbus, O	Best Single Basket Filled with Plants	$3 00
Mrs. E. J. Tyne	Columbus, O	2d Best	2 00
Mrs. E. L. Charles	Columbus, O	Best Pair of Vases Filled with Plants	5 00
Mrs. T. H. Kennedy	Columbus, O	Best Pair Hanging Baskets, Filled	4 00
Mrs. E. L. Charles	Columbus, O	2d Best	2 00
Mrs. E. L. Charles	Columbus, O	Best Porch Box Filled with Plants	5 00
Mrs. E. J. Tyne	Columbus, O	2d Best	3 00
Mrs. T. H. Kennedy	Columbus, O	Best Single Specimen Rubber Plant	3 00
Mrs. E. L. Charles	Columbus, O	2d Best	2 00
Mrs. E. L. Charles	Columbus, O	Best Single Specimen Asparagus, Sprengeri or Plumosus	3 00
Mrs. E. J. Tyne	Columbus, O	2d Best	2 00
		CUT FLOWERS AND FLORAL DESIGNS.	
Mrs. E. L. Charles	Columbus, O	Best Pair Bouquets	10 00
Mrs. E. J. Tyne	Columbus, O	2d Best	5 00
J. H. Milnor & Son	Ada, O	Best Dining Table Vase, 24 Inches High	10 00
Mrs. E. J. Tyne	Columbus, O	2d Best	5 00
Mrs. E. L. Charles	Columbus, O	Best Dining Table Vase, 12 inches High	10 00
Mrs. E. J. Tyne	Columbus, O	2d Best	3 00
Mrs. E. L. Charles	Columbus, O	Best Large Festival Design	12 00
Mrs. E. J. Tyne	Columbus, O	2d Best	6 00
J. H. Milnor & Son	Ada, O	Best Large Funeral Design	12 00
Mrs. E L. Charles	Columbus, O	2d Best	6 00
J. H. Milnor & Son	Ada, O	Best Collection Small Designs	12 00
Mrs E. L. Charles	Columbus, O	2d Best	6 00
J. H. Milnor & Son	Ada, O	Best Display Cut Roses	10 00
Mrs. E. L. Charles	Columbus, O	2d Best	5 00
Cushman GladiolusCo.	Sylvania, O	Best Display Cut Gladioli	12 00
Mrs. E. L. Charles	Columbus, O	2d Best	6 00
Cushman GladiolusCo	Sylvania, O	Best Display Cut Dahlias	8 00
Mrs. Byron Merrill	Pataskala	2d Best	4 00
J. H. Milnor & Son	Ada, O	Best Display Cut Carnations	8 00
Mrs. E. L. Charles	Columbus, O	2d Best	4 00
Mrs. E A. Brenaman	Camp Chase, O	Best Display Cut Asters	8 00
Mrs. E. L. Charles	Columbus, O	2d Best	4 00
Mrs. E. L. Charles	Columbus, O	Best Display Any Other Variety Cut Flowers	5 00
J. H. Milnor & Son	Ada, O	2d Best	3 00
Mrs. E. L. Charles	Columbus, O	Best Display Water Lilies in Tubs, Cut or Growing	10 00
Mrs. E. J. Tyne	Columbus, O	2d Best	7 00
Mrs. E. L. Charles	Columbus, O	Best Display Cut Flowers	15 00
Mrs. E. J. Tyne	Columbus, O	2d Best	10 00

ELEVENTH DEPARTMENT—WOMAN'S WORK.

A. P. SANDLES—Member in Charge.

TEXTILE FABRICS AND DOMESTIC MANUFACTURES.

HOUSEHOLD FABRICS—AMATEUR.

Name of Owner.	Postoffice.	Awards.	Amount.
Mrs. R. M. Colley	Columbus, O	Best Silk Quilt	$3 00
Mrs. Louise Bonner	Marion, O	2d Best	2 00
Mrs. E Buck	Lockland, O	Best Japanese Quilt (Crazy)	3 00
Mrs. E. Buck	Lockland, O	Best Worsted Quilt	2 00
Mrs. F. J. Barth	Bucyrus, O	Best Log Cabin Quilt	2 00
Mrs. E. Buck	Lockland, O	2d Best	1 00
Mrs. Louise Bonner	Marion, O	Best White Quilt	2 00
Elizabeth Heed	Columbus, O	Best Calico Patchwork Quilt	2 00
Mrs. Jacob Huggins	Columbus, O	2d Best	1 00
Maud C. Hinsey	Pekin, Ill	Best Cradle Quilt, Silk	2 00
Mrs. E. Buck	Lockland, O	2d Best	1 00
Mrs. M. B. Clutter	Centerburg, O	Best Specimen of Quilting	2 00
Amelia D. Covault	Mechanicsburg, O	2d Best	1 00
Laura Hardy	Marion, O	Best Silk Comfort	2 00
Mrs. E. Buck	Lockland, O	Best Worsted Comfort	2 00
Mrs. Louise Bonner	Marion, O	2d Best	1 00
Mrs. H. H. Reymer	Bellefontaine, O	Best Hand-made Rug	2 00
D. A. Beckwith	Columbus, O	2d Best	1 00
M. L. Johnson	Dayton, O	Best Rug on Burlap	2 00
D. A. Beckwith	Columbus, O	2d Best	1 00
Elizabeth Heed	Columbus, O	Best Woven Silk Portieres	3 00
Elizabeth Heed	Columbus, O	2d Best	2 00
Mary Stewart	Jacksontown, O	Best Ten Yards Rag Carpet	3 00
Mrs. O. J. Miller	Mt. Gilead, O	2d Best	2 00

KNITTING—AMATEUR.

Name of Owner.	Postoffice.	Awards.	Amount.
Maud C. Hinsey	Pekin, Ill	Best Pair Silk Stockings	2 00
Mrs. G. Bamback	Ripley, O	2d Best	1 00
M. L. Johnson	Dayton, O	Best Pair Silk Socks	2 00
Maud C. Hinsey	Pekin, Ill	Best Pair Woolen Stockings	2 00
Maud C. Hinsey	Pekin, Ill	Best Pair Wolen Socks	2 00
Maud C. Hinsey	Pekin, Ill	2d Best	1 00
Amelia D. Covault	Mechanicsburg, O	Best Pair Golf Gloves	2 00
Mrs. L. C. Covault	Mechanicsburg, O	Best Pair Silk Mittens	2 00
Mrs. O. J. Miller	Mt. Gilead, O	2d Best	1 00
Maud C. Hinsey	Pekin, Ill	Best Pair Woolen Mittens	2 00
Mrs. Jacob Huggins	Columbus, O	2d Best	1 00
Miss Mattie Hall	Lexington, Ky	Best Pair Slippers	2 00
Amelia D. Covault	Mechanicsburg, O	2d Best	1 00
M. L. Johnson	Dayton, O	Best Lady's Sweater	2 00
Mrs. J. W. Parker	Delaware, O	2d Best	1 00
Mrs. M. H. Covault	Mechanicsburg, O	Best Shawl, Large	2 00
Miss Mattie Hall	Lexington, Ky	2d Best	1 00
Maud C. Hinsey	Pekin, Ill	Best Bed Spread	2 00
Mrs. G. Bamback	Ripley, O	2d Best	1 00
Miss Mattie Hall	Lexington, Ky	Best Afghan, Large	3 00
Mrs. E. Buck	Lockland, O	2d Best	2 00
Mrs. W. H. Covault	Mechanicsburg, O	Best Woolen Lace, Two Yards	2 00
Mrs. L. C. Covault	Mechanicsburg, O	2d Best	1 00
Maud C. Hinsey	Pekin, Ill	Best Cotton Lace, Two Yards	2 00
Amelia D. Covault	Mechanicsburg, O	2d Best	1 00
Maud C. Hinsey	Pekin, Ill	Best Display, Five Pieces	3 00
Mrs. W. H. Covault	Mechanicsburg. O	2d Best	2 00

CROCHET WORK—AMATEUR.

Name of Owner.	Postoffice.	Awards.	Amount.
Maud C. Hinsey	Pekin, Ill	Best Pair Slippers	2 00
Miss Mattie Hall	Lexington, Ky	2d Best	1 00
Miss Mattie Hall	Lexington, Ky	Best Lady's Skirt	2 00
Mrs. N. H. Jennings	Cincinnati, O	2d Best	1 00
Mrs. N. J. Cover	Mt. Gilead, O	Best Shawl, Large	2 00
Mrs. J. W. Parker	Delaware, O	2d Best	1 00
Mrs. E. Buck	Lockland, O	Best Infant's Hood	1 00
Mrs. F. J. Barth	Bucyrus, O	2d Best	50
Louise H. Ackley	Columbus, O	Best Infant's Sacque	1 00
Mrs. L. Reinert	Columbus, O	2d Best	50

WOMAN'S WORK—Continued.

CROCHET WORK—AMATEUR—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
Mrs. E. Buck........	Lockland, O..........	Best Infant's Skirt....................	$1 00
....	....	2d Best..................................	50
Miss Mattie Hall.....	Lexington, Ky........	Best Table Mats, Cotton...............	1 00
Mrs. J. W. Wilson.....	Norwood, O...........	2d Best..................................	50
Mrs. W. H. Covault...	Mechanicsburg, O.....	Best Doilies, Six.......................	1 00
Mrs. J. W. Wilson....	Norwood, O...........	2d Best..................................	50
Maud C. Hinsey......	Pekin, Ill.............	Best Woolen Lace, Two Yards...........	1 00
Louise H. Ackley......	Columbus, O..........	2d Best..................................	50
Mrs. W. H. Covault...	Mechanicsburg, O.....	Best Cotton Lace, Two Yards..........	1 00
M. L. Johnson.......	Dayton, O............	2d Best..................................	50
Mrs. J. W Young....	Columbus, O..........	Best Specimen Irish Crochet...........	1 00
Miss Mattie Hall.....	Lexington, Ky........	2d Best..................................	50
Maud C. Hinsey......	Pekin, Ill.............	Best Afghan, Large....................	2 00
Mrs. E. Buck........	Lockland, O..........	2d Best..................................	1 00
Mrs. J. W. Parker.....	Delaware, O..........	Best Afghan, Small....................	1 00
Mrs. E. Buck........	Lockland, O..........	2d Best..................................	50
Maud C. Hinsey......	Pekin, Ill.............	Best Bed Spread.......................	2 00
W. T. McCrea.........	Circleville, O.........	2d Best..................................	1 00
Laura Hardy........	Marion, O............	Best Display, Five Pieces...............	3 00
Mrs. J. E. Harris.....	Columbus, O..........	2d Best..................................	2 00

HAND NEEDLEWORK—AMATEUR.

Name of Owner.	Postoffice.	Awards.	Amount.
Mrs. Louise Bonner...	Marion, O............	Best Pair Pillow Cases.................	2 00
Mrs. R. M. Foster....	Waverly, O...........	2d Best..................................	1 00
M. L. Johnson.......	Dayton, O............	Best Pair Sheets.......................	2 00
Mrs. Louise Bonner...	Marion, O............	2d Best..................................	1 00
Mrs. L. Reinert......	Columbus, O..........	Best Sofa Pillow.......................	2 00
Mrs. O. J. Miller.....	Mt. Gilead, O.........	2d Best..................................	1 00
Mrs. A. W. Dorbert....	Columbus, O..........	Best Lady's Waist......................	3 00
Ivy Gearhart........	Van Wert, O..........	2d Best..................................	2 00
Mrs. Clara Fogle.....	Mt. Gilead, O.........	Best Lady's Dressing Jacket...........	3 00
Mrs. J. W. Wilson....	Norwood, O...........	2d Best..................................	2 00
Mrs. M. W. Florence..	Columbus, O..........	Best Suit Underwear, Three Pieces......	3 00
Mrs. Clara Fogle.....	Mt. Gilead, O.........	2d Best..................................	2 00
Mrs. Clara Fogle.....	Mt. Gilead, O.........	Best Night Dress.......................	2 00
Mrs. E. Buck........	Lockland, O..........	2d Best..................................	1 00
Mrs. E. Buck........	Lockland, O..........	Best Chemise..........................	2 00
Minnie Dawnly.......	Newark, O............	2d Best..................................	1 00
Maud C. Hinsey......	Pekin, Ill.............	Best Skirt..............................	2 00
Mrs. F. J. Barth......	Bucyrus, O...........	2d Best..................................	1 00
Minnie Dawnly.......	Newark, O............	Best Short Underskirt..................	2 00
Mrs. Louise Bonner...	Marion, O............	2d Best..................................	1 00
Mrs. F. J. Barth......	Bucyrus, O...........	Best Corset Cover......................	2 00
Minnie Dawnly.......	Newark, O............	2d Best..................................	1 00
Mrs. F. J. Barth......	Bucyrus, O...........	Best Infant's Robe and Skirt...........	2 00
Mrs. Clara Fogle.....	Mt. Gilead, O.........	Best Fancy Apron......................	2 00
Minnie Dawnly.......	Newark, O............	2d Best..................................	1 00
Miss Clara Fogle......	Mt. Gilead, O.........	Best Display, Five Pieces...............	5 00
Mrs. F. J. Barth......	Bucyrus, O...........	2d Best..................................	3 00

MACHINE SEWING—AMATEUR.

Name of Owner.	Postoffice.	Awards.	Amount.
....	....	Best Suit Underwear, Three Pieces......	2 00
		2d Best..................................	1 00
Mrs. W. H. Jennings .	Cincinnati, O.........	Best Night Dress.......................	1 00
Mrs. F. J. Barth......	Bucyrus, O...........	Best Corset Cover......................	1 00
Mrs. J. W. Wilson....	Norwood, O...........	2d Best..................................	50
Mrs. J. W. Wilson....	Norwood, O...........	Best Skirt..............................	1 00
Mrs. W. H. Jennings .	Cincinnati, O.........	2d Best..................................	50
Mrs. J. W Wilson....	Norwood, O...........	Best Lady's Dress, Cotton.............	2 00
Mrs. J. W. Wilson...	Norwood, O...........	Best Lady's Dressing Jacket, Cotton....	2 00
....	....	2d Best..................................	1 00
Mrs. F. J. Barth......	Bucyrus, O...........	Best Fancy Apron......................	1 00
Mrs. O. J. Miller......	Mt. Gilead, O.........	2d Best..................................	50
Mrs. J. W. Wilson....	Norwood, O...........	Best Night Shirt........................	1 00
Mrs. F. J. Barth......	Bucyrus, O...........	Best Display, Five Pieces...............	3 00
Mrs. J. W. Wilson...	Norwood, O...........	2d Best..................................	2 00

CHILDREN'S CLASS.

Name of Owner.	Postoffice.	Awards.	Amount.
Blanche Baxter......	Pekin. Ill.............	Best Outline Embroidery..............	1 00
Blanche Baxter......	Pekin, Ill.............	2d Best..................................	50
Blanche Baxter......	Pekin, Ill.............	Best Silk Embroidery..................	1 00
Ruth Wrinkle........	Columbus, O..........	2d Best..................................	50
Leonora Buck........	Lockland, O..........	Best Cotton Embroidery................	1 00
Blanche Baxter......	Pekin, Ill.............	2d Best..................................	50
Helen Wilson........	Dayton, O............	Best Cross-stitch Embroidery...........	1 00
Blanche Baxter......	Pekin, Ill.............	2d Best..................................	50

WOMAN'S WORK—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
CHILDREN'S CLASS—Concluded.			
Ethe Wilson	Norwood, O.	Best Drawn Work	$1 00
Blanche Baxter	Pekin, Ill	2d Best	50
Blanche Baxter	Pekin, Ill.	Best Plain Sewing.	1 00
Ethe Wilson	Norwood, O.	2d Best	50
Banche Baxter	Pekin, Ill	Best Knitting	1 00
Leonora Buck	Lockland, O.	2d Best	50
Blanche Baxter	Pekin, Ill	Best Crocheting	1 00
Ethe Wilson	Norwood, O.	2d Best	50
Helen Wilson	Dayton, O	Best Pyrography	1 00
Blanche Baxter	Pekin, Ill	2d Best	50
Helen Wilson	Dayton, O	2d Best Stencil on Fabric	50
Helen Wilson	Dayton, O	Best Water Color	1 00
Blanche Baxter	Pekin, Ill	Best Pencil Drawing	1 00
Helen Wilson	Dayton, O	2d Best	50
Helen Wilson	Dayton, O	Best Wood Carving	1 00
Helen Wilson	Dayton, O	Best Basketry	1 00
		2d Best	50
CROSS-STITCH EMBROIDERY—AMATEUR.			
Adda B. Joyce	Columbus, O	Best Table Cover	2 00
Mrs. E. Buck	Lockland, O.	2d Best	1 00
Maud C. Hinsey	Pekin, Ill	Best Sofa Pillow	2 00
Mrs. Effie Cunningham	Newark, O	2d Best	1 00
Mrs. L. Johnson	Dayton, O	Best Pin Cushion	2 00
Miss Mattie Hall	Lexington, Ky.	2d Best	1 00
Mrs. J. W. Parker	Delaware, O.	Best Fancy Bag	2 00
Georgie A. King	Columbus, O	2d Best	1 00
Maud C. Hinsey	Pekin, Ill	Best Shirt Waist Set	2 00
M. L. Johnson	Dayton, O	2d Best	1 00
M. L. Johnson	Dayton, O	Best Specimen	2 00
Maud C. Hinsey	Pekin, Ill	2d Best	1 00
Miss Mattie Hall	Lexington, Ky.	Best Display, Five Pieces	3 00
Mrs. J. W. Wilson	Norwood, O.	2d Best	2 00
COTTON OR LINEN EMBROIDERY—AMATEUR.			
Miss Mattie Hall	Lexington, Ky.	Best Pair Pillow Cases	2 00
Maud C. Hinsey	Pekin, Ill	2d Best	1 00
Mrs. E. Buck	Lockland, O.	Best Pair Sheets	2 00
Maud C. Hinsey	Pekin, Ill	Best Table Cloth	2 00
Mrs. W, H. Jennings	Cincinnati, O.	2d Best	1 00
Maud C. Hinsey	Pekin, Ill	Best Dinner Napkins, Twelve	2 00
Mrs. F. J. Barth	Bucyrus, O.	2d Best	1 00
Maud C. Hinsey	Pekin, Ill	Best Lunch Cloth	2 00
Mrs. J. W. Parker	Delaware, O.	2d Best	1 00
Mrs. F. J. Barth	Bucyrus, O.	Best Center Piece	2 00
Charlotte Harris	Springfield, O	2d Best	1 00
Mrs. N. H. Jennings	Cincinnati, O.	Best Doilies, Six	2 00
Mrs. J. W. Wilson	Norwood, O.	2d Best	1 00
Miss Mattie Hall	Lexington, Ky	Best Tray Cloth	2 00
Mrs. E. Buck	Lockland, O.	2d Best	1 00
Mrs. E. Buck	Lockland,O	Best Sideboard Cover	2 00
Mrs. J. W. Wilson	Norwood, O.	2d Best	1 00
Miss Mattie Hall	Lexington, Ky.	Best Pair Towels	2 00
Mrs. J. W. Parker	Delaware, O.	2d Best	1 00
Ivy Gearhart	Van Wert, O.	Best Monogram	2 00
Minnie Downly	Newark, O.	2d Best	1 00
Miss Eura Snyder	Columbus, O	Best Lady's Skirt	3 00
Amelia D. Covault	Mechanicsburg, O.	2d Best	2 00
Maud C. Hinsey	Pekin, Ill	Best Chemise	2 00
Mrs. E. Buck	Lockland, O.	2d Best	1 00
Miss Mattie Hall	Lexington, Ky	Best Corset Cover	2 00
Mrs. E. Buck	Lockland, O.	2d Best	1 00
Mrs. F. J. Barth	Bucyrus, O.	Best Shirt Waist	3 00
Minnie Downly	Newark, O.	2d Best	2 00
Miss Mattie Hall	Lexington, Ky	Best Shirt Waist Set	2 00
Mrs. O. J. Miller	Mt. Gilead, O.	2d Best	1 00
Mrs. E. Buck	Lockland, O.	Best Infant's Cap	2 00
Mrs. G. E. Brittain	Dayton, O	2d Best	1 00
Mrs. F. J. Barth	Bucyrus, O.	Best Specimen	2 00
Ivy Gearhart	Van Wert, O.	2d Best	1 00
Mrs. F. J. Barth	Bucyrus, O.	Best Specimen Shadow Embroidery	2 00
Miss Mattie Hall	Lexington, Ky.	2d Best	1 00
Miss Mattie Hall	Lexington, Ky.	Best Specimen French Embroidery	2 00
Georgie A. King	Columbus, O	2d Best	1 00
Maud C. Hinsey	Pekin, Ill	Best Specimen Bermuda Faggotting	2 00
Georgie A. King	Columbus, O	2d Best	1 00

WOMAN'S WORK—Continued.

COTTON OR LINEN EMBROIDERY—AMATEUR—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
Miss Mattie Hall	Lexington, O	Best Specimen Mountmellick Embroidery	$2 00
Mrs. N. J. Cover	Mt. Gilead, O	2d Best	1 00
Maud C. Hinsey	Pekin, Ill	Best Specimen Hedebo Embroidery	2 00
Miss Mattie Hall	Lexington, Ky	2d Best	1 00
Miss Mattie Hall	Lexington, Ky	Best Specimen Cut Work Embroidery	2 00
Maud C. Hinsey	Pekin, Ill	2d Best	1 00
Mrs. J. W. Wilson	Norwood, O	Best Specimen Coronation Embroidery	2 00
Ivy Gearhart	Van Wert, O	2d Best	1 00
Amelia D. Covault	Mechanicsburg, O	Best Specimen Ajour Embroidery	2 00
Mrs. L. C. Covault	Mechanicsburg, O	2d Best	1 00
Miss Fannie Fearn	Groveport, O	Best Specimen Wallachian Embroidery	2 00
Miss Mattie Hall	Lexington, Ky	2d Best	1 00
Maud C. Hinsey	Pekin, Ill	Best German Spachtel Embroidery	2 00
Mrs. N. H. Jennings	Cincinnati, O	Best Specimen Venetian Ladder Work	2 00
Maud C. Hinsey	Pekin, Ill	Best Specimen Gittertyl	2 00
Mrs. L. C. Covault	Mechanicsburg, O	2d Best	1 00
Miss Mattie Hall	Lexington, Ky	Best Display, Five Pieces	3 00
Mrs. F. J. Barth	Bucyrus, O	2d Best	2 00

EYELET EMBROIDERY—AMATEUR.

Name of Owner.	Postoffice.	Awards.	Amount.
Amelia D. Covault	Mechanicsburg, O	Best Centerpiece	2 00
Mrs. Clara Fogle	Mt, Gilead, O	2d Best	1 00
Mrs. W. H. Covault	Mechanicsburg, O	Best Doilies, Six	2 00
Miss Mattie Hall	Lexington, Ky	2d Best	1 00
Ivy Gearhart	Van Wert, O	Best Shirt Waist	2 00
Mrs. J. W. Young	Columbus, O	2d Best	1 00
Mrs. L. Reinert	Columbus, O	Best Corset Cover	2 00
Mrs. E. L. Graham	Columbus, O	2d Best	1 00
Mrs. E. Buck	Lockland, O	Best Collar and Cuffs	2 00
Miss Mattie Hall	Lexington, Ky	2d Best	1 00
Mrs. N. H. Jennings	Cincinnati, O	Best Large Collar	2 00
Ivy Gearhart	Van Wert, O	Best Hat	2 00
Mrs. J. W. Wilson	Norwood, O	2d Best	1 00
Ivy Gearhart	Van Wert, O	Best Specimen	2 00
Charlotte Harris	Springfield, O	2d Best	1 00
Ivy Gearhart	Van Wert, O	Best Display, Five Pieces	3 00
Mrs. C. C. Weekly	Highland, W. Va	2d Best	2 00

HARDANGER EMBROIDERY—AMATEUR.

Name of Owner.	Postoffice.	Awards.	Amount.
Ivy Gearhart	Van Wert, O	Best Shirt Waist	2 00
Mrs. L. Reinert	Columbus, O	2d Best	1 00
Mrs. Clara Fogle	Mt. Gilead, O	Best Dresser Cover	2 00
Mrs. C. C. Weekly	Highland, W. Va	2d Best	1 00
Mrs. J. W. Wilson	Norwood, O	Best Centerpiece	2 00
Mrs. L. C. Covault	Mechanicsburg, O	2d Best	1 00
Mrs. L. Reinert	Columbus, O	Best Table Cover	2 00
Ivy Gearhart	Van Wert, O	2d Best	1 00
Mrs. E. L. Graham	Columbus, O	Best Collar and Cuffs	2 00
Georgie A. King	Columbus, O	2d Best	1 00
Mrs. F. J. Barth	Bucyrus, O	Best Specimen	2 00
Georgie A. King	Columbus, O	2d Best	1 00

DRAWN WORK—AMATEUR.

Name of Owner.	Postoffice.	Awards.	Amount.
Mrs. J. W. Wilson	Norwood, O	Best Table Cloth	2 00
M. L. Johnson	Dayton, O	2d Best	1 00
Mrs. W. Himmeger	Marion, O	Best Lunch Cloth	2 00
Mrs. B. F. Sampson	Columbus, O	2d Best	1 00
Mrs. L. C. Covault	Mechanicsburg, O	Best Centerpiece	2 00
Mrs. J. W. Parker	Delaware, O	2d Best	1 00
Mrs. W. H. Covault	Mechanicsburg, O	Best Tray Cloth	2 00
Margaret Garver	Mt. Gilead, O	2d Best	1 00
Mrs. Chas. Augustus	Columbus, O	Best Six Napkins	2 00
Mrs. C. C. Weekly	Highland, W. Va	2d Best	1 00
Amelia D Covault	Mechanicsburg, O	Best Six Doilies	2 00
Mrs. O. S. Smith	Massillon, O	2d Best	1 00
Mrs. J. F. Wrinkle	Columbus, O	Best Dresser Cover	2 00
Mrs. W. Himmeger	Marion, O	2d Best	1 00
Mrs. O. S. Smith	Massillon, O	Best Pair Pillow Cases	2 00
Mrs. Louise Bonner	Marion, O	2d Best	1 00
Mrs. C. C. Weekly	Highland, W. Va	Best Pair Sheets	2 00
Mrs. Clara Fogle	Mt. Gilead, O	Best Pair Towels	2 00
Mrs. L. C. Covault	Mechanicsburg, O	2d Best	1 00
M. L. Johnson	Dayton, O	Best Handkerchief	2 00
Adda B. Joyce	Columbus, O	2d Best	1 00

WOMAN'S WORK—Continued.

DRAWN WORK—AMATEUR—Concluded.

Name of Owner.	Postoffice.	Awards.	Amounts
Mrs. J. W. Parker	Delaware, O	Best Lady's Waist	$2 00
Mrs. B. F. Sampson	Columbus, O	2d Best	1 00
Mrs. Clara Fogle	Mt. Gilead, O	Best Specimen Hemstitching	2 00
Maud C. Hinsey	Pekin, Ill	2d Best	1 00
Mrs. C. C. Weekly	Highland, W. Va	Best Specimen Silk Thread	2 00
Adda B. Joyce	Columbus, O	2d Best	1 00

SILK EMBROIDERY—AMATEUR.

Name of Owner.	Postoffice.	Awards.	Amounts
Mrs. N. H. Jennings	Cincinnati, O	Best Lunch Cloth	2 00
Mrs. E. Buck	Lockland, O	2d Best	1 00
Mrs. N. H. Jennings	Cincinnati, O	Best Centerpiece	2 00
Miss Mattie Hall	Lexington, Ky	2d Best	1 00
Mrs. J. E. Harris	Columbus, O	Best Tray Cloth	2 00
Chrissie Fenstermacher	Springfield, O	2d Best	1 00
Miss Mattie Hall	Lexington, Ky	Best Sideboard Cover	2 00
Mrs. N. H. Jennings	Cincinnati, O	2d Best	1 00
Miss Mattie Hall	Lexington, Ky	Best Six Doilies	2 00
Mrs. E. Buck	Lockland, O	2d Best	1 00
Mrs. J. W. Young	Columbus, O	Best Sofa Pillow	2 00
Mrs. E. E. Ensign	Columbus, O	2d Best	1 00
Miss Mattie Hall	Lexington, Ky	Best Specimen Kensington Embroidery	2 00
Mrs. F. J. Barth	Bucyrus, O	2d Best	1 00
Maud C. Hinsey	Pekin, Ill	Best Specimen Roman Embroidery	2 00
Mrs. E. Buck	Lockland, O	2d Best	1 00
Maud C. Hinsey	Pekin, Ill	Best Specimen Delft Embroidery	2 00
Miss Mattie Hall	Lexington, Ky	2d Best	1 00
Mrs. J. S. Jones	Columbus, O	Best Specimen	2 00
Mrs. J. W. Young	Columbus, O	2d Best	1 00
Miss Mattie Hall	Lexington, Ky	Best Display, Five Pieces	5 00
Miss Sue Gaines	Columbus, O	2d Best	2 00
Maud C. Hinsey	Pekin, Ill	Best Lady's Flannel Skirt	2 00
Maud C. Hinsey	Pekin, Ill	2d Best	1 00
Mrs. J. W. Wilson	Norwood, O	Best Infant's Cloak	2 00
Maud C. Hinsey	Pekin, Ill	Best Infant's Shawl or Blanket	2 00
Maud C. Hinsey	Pekin, Ill	2d Best	1 00
Mrs. J. W. Wilson	Norwood, O	Best Child's Dress	2 00
Maud C. Hinsey	Pekin, Ill	Best Specimen	2 00
Mrs. J. W. Young	Columbus, O	2d Best	1 00

BATTENBERG LACE—AMATEUR.

Name of Owner.	Postoffice.	Awards.	Amounts
Mrs. J. W. Young	Columbus, O	Best Curtains	2 00
Mrs. J. A. McDowell	Ironton, O	Best Table Cover	2 00
Mrs. Jacob Becker	Columbus, O	2d Best	1 00
Ivy Gearhart	Van Wert, O	Best Centerpiece	2 00
Mrs. O. J. Miller	Mt. Gilead, O	2d Best	1 00
Mrs. Clara Fogle	Mt. Gilead, O	Best Six Doilies	2 00
Mrs. Chas. Cruse	Columbus, O	2d Best	1 00
Miss J. Z. Cormman	Columbus, O	Best Dresser Cover	2 00
Mrs. W. Himmeger	Marion, O	2d Best	1 00
Maud C. Hinsey	Pekin, Ill	Best Bolero	2 00
Mrs. J. A. McDowell	Ironton, O	2d Best	1 00
Ivy Gearhart	Van Wert, O	Best Large Collar	2 00
Mrs. Chas. Cruse	Columbus, O	2d Best	1 00
Mrs. O. J. Miller	Mt. Gilead, O	Best Medallions for Dress Garniture	2 00
Mrs. L. C. Covault	Mechanicsburg, O	Best Child's Cap	2 00
Mrs. F. J. Barth	Bucyrus, O	2d Best	1 00
Mrs. Chas. Cruse	Columbus, O	Best Specimen	2 00
Ivy Gearhart	Van Wert, O	2d Best	1 00

POINT LACE—AMATEUR.

Name of Owner.	Postoffice.	Awards.	Amounts
Mrs. E. L. Graham	Columbus, O	Best Dress Garniture	2 00
Mrs. O. S. Smith	Massillon, O	2d Best	1 00
Mrs. O. S. Smith	Massillon, O	Best Yoke	2 00
Mrs. O. J. Miller	Mt. Gilead, O	Best Large Collar	2 00
Mrs. O. S. Smith	Massillon, O	2d Best	1 00
Mrs. O. S. Smith	Massillon, O	Best Collar and Cuffs	2 00
Marguret Garver	Mt. Gilead, O	2d Best	1 00
Mrs. O. J. Miller	Mt. Gilead, O	Best Tie Ends	2 00
Anna Wells	Columbus, O	2d Best	1 00
Marguret Garver	Mt. Gilead, O	Best Handkerchief	2 00
Maud C. Hinsey	Pekin, Ill	2d Best	1 00
Mrs. O. J. Miller	Mt. Gilead, O	Best Infant's Cap	2 00
Mrs. W. H. Jennings	Cincinnati, O	2d Best	1 00
Marguret Garver	Mt. Gilead, O	Best Specimen	2 00
Anna Wells	Columbus, O	2d Best	1 00
Mrs. O. J. Miller	Mt. Gilead, O	Best Specimen Point Applique	2 00
Maud C. Hinsey	Pekin, Ill	2d Best	1 00

WOMAN'S WORK—Continued.

LACE AND TATTING—AMATEUR.

LACE.

Name of Owner.	Postoffice.	Awards.	Amount.
Mrs. J. W. Wilson	Norwood, O.	Best Specimen Marie Antoinette	$2 00
Maud C. Hinsey	Pekin, Ill.	2d Best	1 00
Maud C. Hinsey	Pekin, Ill.	Best Specimen Duchess	2 00
Mrs. F. J. Barth	Bucyrus, O.	Best Specimen Teneriffe	2 00
Mrs. J. W. Wilson	Norwood, O.	2d Best	1 00
Marguret Garver	Mt. Gilead, O.	Best Specimen Honiton	2 00
Mrs. O. J. Miller	Mt. Gilead, O.	2d Best	1 00
Mrs. W. H. Covault	Mechanicsburg, O.	Best Specimen Bobbin	2 00
Amelia D. Covault	Mechanicsburg, O.	Best Specimen Netting	2 00
Mrs. G. E. Brittain	Dayton, O.	2d Best	1 00

TATTING.

Name of Owner.	Postoffice.	Awards.	Amount.
Viola R. Fox	Springfield, O.	Best Handkerchief	2 00
Mrs. W. H. Covault	Mechanicsburg. O.	2d Best	1 00
Viola R. Fox	Springfieln, O.	Best Tie Ends	2 00
Mrs. M. B. Clutter	Centerburg, O.	2d Best	1 00
Viola R. Fox	Springfield, O.	Best Collar	2 00
Mrs. M. B. Clutter	Centerburg, O.	2d Best	1 00
Viola R. Fox	Springfield, O.	Best Six Doilies	2 00
Mrs. W. H. Covault	Mechanicsburg, O.	2d Best	1 00
Viola R. Fox	Springfield, O.	Best Specimen	2 00
Mrs. J. W. Wilson	Norwood, O.	2d Best	1 00

FANCY WORK—AMATEUR

Name of Owner.	Postoffice.	Awards.	Amount.
Viola R. Fox	Springfield, O.	Best Shirt Waist	2 00
Mrs. Clara Fogle	Mt. Gilead, O.	2d Best	1 00
Viola R. Fox	Springfield, O.	Best Collar and Cuff Set	2 00
Miss Mattie Hall	Lexington, Ky.	2d Best	1 00
Mrs. Clara Fogle	Mt. Gilead, O.	Best Lady's Belt	2 00
Mrs. W. H. Covault	Mechanicsburg, O.	2d Best	1 00
Miss Mattie Hall	Lexington, Ky.	Best Three Doilies	2 00
Miss Fannie Fearn	Groveport, O.	2d Best	1 00
Mrs. E. Buck	Lockland, O.	Best Couch Pillow	2 00
Ivy Gearhart	Van Wert, O.	2d Best	1 00
Mrs. J. W. Wilson	Norwood, O.	Best Pin Cushion	2 00
Adda B. Joyce	Columbus, O.	2d Best	1 00
Mrs. E. Buck	Lockland, O.	Best Couch Pillow, Fancy	2 00
Ivy Gearhart	Van Wert, O.	2d Best	1 00
Miss Fannie Fearn	Groveport, O.	Best Handkerchief Case	2 00
Miss Mattie Hall	Lexington, Ky.	2d Best	1 00
Miss Mattie Hall	Lexington, Ky.	Best Glove Case	2 00
Mrs. E. Buck	Lockland, O.	2d Best	1 00
Mrs. F. J. Barth	Bucyrus, O.	Best Fancy Work Bag	2 00
Mrs. J. A. Mosteller	Newark, O.	2d Best	1 00
Mrs. F. J. Barth	Bucyrus, O.	Best Party Bag	2 00
Mrs. J. W. Wilson	Norwood, O.	2d Best	1 00
Miss Fannie Fearn	Groveport, O.	Best Opera Bag	2 00
Mrs. J. A. Mosteller	Newark, O.	2d Best	1 00
Georgie A. King	Columbus, O.	Best Shopping Bag	2 00
Mrs. J. W. Wilson	Norwood, O.	2d Best	1 00
Miss Fannie Fearn	Groveport, O.	Best Laundry Bag	2 00
Mrs. F. J. Barth	Bucyrus, O.	2d Best	1 00
Eva B. Mosteller	Newark, O.	Best Book Cover	2 00
Charlotte Harris	Springfield, O.	2d Best	1 00
Carrie F. Mosteller	Newark, O.	Best Magazine Cover	2 00
Georgie A. King	Columbus, O.	2d Best	1 00
Carrie F. Mosteller	Newark, O.	Best Scrap Basket	2 00
Mrs. N. J. Cover	Mt. Gilead, O.	2d Best	1 00

ART NEEDLEWORK—AMATEUR.

Name of Owner.	Postoffice.	Awards.	Amount.
Mrs. J. W. Young	Columbus, O.	Best Lady's Waist	2 00
Mrs. N. J. Cover	Mt. Gilead, O.	2d Best	1 00
Viola R. Fox	Springfield, O.	Best Dress Medallions	2 00
Amelia D. Covault	Mechanicsburg, O.	Best Stockings	2 00
Mrs. N. H. Jennings	Cincinnati, O.	2d Best	1 00
Miss Mattie Hall	Lexington, Ky.	Best Six Collars	2 00
M. L. Johnson	Dayton, O.	2d Best	1 00
Miss Mattie Hall	Lexington, Ky.	Best Collar and Cuffs	2 00
Maud C. Hinsey	Pekin, Ill.	2d Best	1 00
Mrs. E. Buck	Lockland, O.	Best Lunch Cloth	2 00
Mrs. J. W. Parker	Delaware, O.	2d Best	1 00
Miss Mattie Hall	Lexington, Ky.	Best Centerpiece (24 inches)	2 00
Miss Fannie Fearn	Groveport, O.	2d Best	1 00

WOMAN'S WORK—Continued.

ART NEEDLE WORK—AMATEUR—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
Mrs. J. E. Harris	Columbus, O	Best Centerpiece (18 inches)	$2 00
Minnie Downly	Newark, O	2d Best	1 00
Minnie Downly	Newark, O	2d Best Centerpiece, Lace and Embroidery	1 00
Miss Mattie Hall	Lexington, Ky	Best Six 12-inch Doilies	2 00
Mrs. E. Buck	Lockland, O	2d Best	1 00
Miss Mattie Hall	Lexington, Ky	Best Tray Cloth	2 00
Maud C. Hinsey	Pekin, Ill	2d Best	1 00
Miss Mattie Hall	Lexington, Ky	Best Sideboard Cover	2 00
Maud C. Hinsey	Pekin, Ill	2d Best	1 00
Mrs. N. J. Cover	Mt. Gilead, O	Best Table Cover	2 00
Mrs. Clara Fogle	Mt. Gilead, O	2d Best	1 00
Ivy Gearhart	Van Wert, O	Best Couch Pillow	2 00
Mrs. W. Himmeger	Marion, O	2d Best	1 00
Miss Bertha Williams	Columbus, O	Best Couch Pillow, Raffia	2 00
Ruth Bowman	Columbus, O	2d Best	1 00
Miss Mattie Hall	Lexington, Ky	Best Handkerchief Case	2 00
Mrs. J. E. Harris	Columbus, O	2d Best	1 00
Miss Mattie Hall	Lexington, Ky	Best Glove Case	2 00
Mrs. J. E. Harris	Columbus, O	2d Best	1 00
Mrs. F. J. Barth	Bucyrus, O	Best Party Bag	2 00
Georgie A. King	Columbus, ,O	2d Best	1 00
Viola R. Fox	Springfield, O	Best Opera Bag	2 00
Mrs. F. J. Barth	Bucyrus, O	2d Best	1 00
Georgie A. King	Columbus, O	Best Shopping Bag	2 00
Miss Fannie Fearn	Groveporti O	2d Best	1 00
Mrs. N. H. Jennings	Cincinnati, O	2d Best Magazine Cover	1 00
Mrs. Effie Cunningham	Newark, O	Best Book Cover	2 00
Mrs. E. Buck	Lockland, O	2d Best	1 00
Mrs. E, E. Ensign	Columbus, O	Best Specimen	3 00
Ivy Gearhart	Van Wert, O	2d Best	1 00
Mrs. Clara Fogle	Mt. Gilead, O	Best Specimen, Bulgarian	2 00
Maud C. Hinsey	Pekin, Ill	2d Best	1 00
Miss Fannie Fearn	Groveport, O	Best Specimen, Beidermeier	2 00
Ivy Gearhart	Van Wert, O	2d Best	1 00
Maud C. Hinsey	Pekin, Il	Best Specimen Ribbon	2 00
Mrs. R. M. Foster	Waverly, O	2d Best	1 00
Miss Mattie Hall	Lexington, Ky	Best Specimen Jewel	2 00
Maud C. Hinsey	Pekin, Ill	2d Best	1 00
Maud C. Hinsey	Pekin, Ill	Best Specimen, Roman	2 00
Mrs. E. Buck	Lockland, O	2d Best	1 00
Charlotte Harris	Springfield, O	Best Specimen, Coronation	2 00
Mrs. W. H. Covault	Mechanicsburg, O	Best Specimen, Featherstitch	2 00
Miss Mattie Hall	Lexington, Ky	2d Best	1 00
Maud C. Hinsey	Pekin, Ill	Best Specimen, Darned Net	2 00
Mrs. J. E. Harris	Columbus, O	2d Best	1 00
Ivy Gearhart	Van Wert, O	Best Specimen, Huckaback	2 00
Maud C. Hinsey	Pekin, Ill	2d Best	1 00
Miss Mattie Hall	Lexington, Ky	Best Specimen, Outline	2 00
M. L. Johnson	Dayton, O	2d Best	1 00
Maud C. Hinsey	Pekin, Ill	Best Specimen, Net Applique	2 00
Adda B. Joyce	Columbus, O	2d Best	1 00
Mrs. F. J. Barth	Bucyrus, O	Best Display, Ten Finished Pieces	10 00
Mrs. J. E Harris	Columbus, O	2d Best	5 00

DECORATIVE ART WORK—AMATEUR.

Hester C. Harris	Springfield, O	Best Picture Frame	2 00
Miss Alice Kunkle	Greenville, O	2d Best	1 00
Lillian Fletcher	Columbus, O	Best Couch Pillow	2 00
Lillian Fletcher	Columbus, O	2d Best	1 00
M. L. Johnson	Dayton, O	Best Handkerchief Case or Box	2 00
Charlotte Harris	Springfield, O	2d Best	1 00
Charlotte Harris	Springfield, O	Best Glove Case or Box	2 00
Carrie F. Mosteller	Newark, O	2d Best	1 00
Miss Alice Kunkel	Greenville, O	Best Jewel Case or Chest	2 00
Virginia Wiltberger	Columbus, O	2d Best	1 00
Virginia Wiltberger	Columbus, O	Best Book Cover	2 00
Virginia Wiltberger	Columbus, O	Best Magazine Cover	2 00
Annie W. Russell	Springfield, O	2d Best	1 00
Eva B. Mosteller	Newark, O	Best Photogragh Case	2 00
Georgie A. King	Columbus, O	2d Best	1 00
Viola R. Fox	Springfield, O	Best Blotting Pad	2 00
R. E. Coe	Marion, O	2d Best	1 00
Virginia Wiltberger	Columbus, O	Best Opera Bag	2 00
Annie W. Russell	Springfield, O	2d Best	1 00
Annie W. Russell	Springfield, O	Best Shopping Bag	2 00
Carrie F. Mosteller	Newark, O	2d Best	1 00
Amelia D. Covault	Mechanicsburg, O	Best Stencil on Fabric	2 00
Mrs. J. Anson Hopkins	Dayton, O	2d Best	1 00
Mrs. Chas. Augustus	Columbus, O	Best Tapestry Painting	2 00

WOMAN'S WORK—Continued.

PYROGRAPHY AND BASKETRY—AMATEUR.

PYROGRAPHY.

Name of Owner.	Postoffice.	Awards.	Amount.
Ruth Bowman	Columbus, O	Best Chair	$2 00
George Vogel	Columbus, O	2d Best	1 00
Ruth Bowman	Columbus, O	Best Tabourette	2 00
Mrs. J. Anson Hopkins	Dayton, O	2d Best	1 00
Mrs. G. E. Brittain	Dayton, O	Best Pipe Rack	2 00
V. O. Lawrence	Columbus, O	2d Best	1 00
Mrs. W. Himmeger	Marion, O	Best Handkerchief Box	2 00
Chrissie Fenstermacher	Springfield, O	2d Best	1 00
Ruth Bowman	Columbus, O	Best Glove Box	2 00
Carrie E. Mosteller	Newark, O	2d Best	1 00
Ruth Bowman	Columbus, O	Best Dresser Box	2 00
V. O. Lawrence	Columbus, O	2d Best	1 00
Charlotte Harris	Springfield, O	Best Waste Paper Box	2 00
Mrs. J. Anson Hopkins	Dayton, O	2d Best	1 00
Mrs. W. A. Sheck	Crawfordsville, Ind	Best Jewel Chest	2 00
Carrie E. Mosteller	Newark, O	2d Best	1 00
Chrissie Fenstermacher	Springfield, O	Best Etched Ideal Head	2 00
Carrie E. Mosteller	Newark, O	2d Best	1 00
Chrissie Fenstermacher	Springfield, O	Best Plaque	2 00
V. O. Lawrence	Columbus, O	2d Best	1 00
Mrs. Winifred Austin Sheck	Crawfordsville, Ind	Best Panel	2 00
Mrs. Winifred Austin Sheck	Crawfordsville, Ind	2d Best	1 00
Mrs. W. H. Jennings	Cincinnati, O	Best Nut Bowl	2 00
Chrissie Fenstermacher	Springfield, O	2d Best	1 00
V. O. Lawrence	Columbus, O	Best Specimen on Wood	2 00
V. O. Lawrence	Columbus,, O	2d Best	1 00
Mrs. Winifred Austin Sheck	Crawfordsville, Ind	Best Specimen on Leather	2 00
Charlotte Harris	Springfield, O	2d Best	1 00
Annie W. Russell	Springfield, O	Best Specimen on Velvet	2 00
Charlotte Harris	Springfield, O	2d Best	1 00
Miss Nell Reeves	Columbus, O	Best Display, Five Pieces	5 00
Charlotte Harris	Springfielff, O	2d Best	3 00

BASKETRY.

Name of Owner.	Postoffice.	Awards.	Amount.
Mrs. J. A. Mosteller	Newark, O	Best Raffia Basket, Large	2 00
M. L. Johnson	Dayton, O	Best Raffia, Small	2 00
Mrs. J. A. Mosteller	Newark, O	2d Best	1 00
Mrs. J. A. Mosteller	Newark, O	Best Reed Basket	2 00
M. L. Johnson	Dayton, O	2d Best	1 00
Mrs. J. A. Mosteller	Newark, O	Best Tray	2 00
M. L. Johnson	Dayton, O	2d Best	1 00
Mrs. J. A. Mosteller	Newark, O	Best Specimen	2 00

WOOD CARVING—AMATEUR.

Name of Owner.	Postoffice.	Awards.	Amount.
Miss Alice Kunkel	Greenville, O	Best Tabourette	3 00
Miss Mary Godard	Columbus, O	Best Sconce	2 00
Hester C. Harris	Springfield, O	Best Picture Frame	2 00
Annie W. Russell	Springfield, O	2d Best	1 00
Mabel Loomis Aulick	Columbus, O	Best Book Rack	2 00
Hester C. Harris	Springfield, O	2d Best	1 00
Miss Mary Godard	Columbus, O	Best Magazine Rack	3 00
Annie W. Russell	Springfield, O	Best Specimen	2 00
M. L. Johnson	Dayton, O	2d Best	1 00
Hester C. Harris	Springfield, O	Best Display, Five Pieces	5 00
Miss Alice Kunkel	Greenville, O	2d Best	3 00

ARTS AND CRAFTS—AMATEUR

HAND-WROUGHT METAL.

Name of Owner.	Postoffice.	Awards.	Amount.
Miss Mary Godard	Columbus, O	Best Brass Platter	2 00
Miss Mary Godard	Columbus, O	Best Brass Tray or Server	2 00
Eva B. Mosteller	Newark, O	2d Best	1 00
Miss Mary Godard	Columbus, O	Best Silver Spoon	2 00
Carrie E. Mosteller	Newark, O	Best Copper Bowl	2 00
Edgar Parker	Columbus, O	2d Best	1 00
Carrie E. Mosteller	Newark, O	Best Copper or Brass Box	2 00
Edgar Parker	Columbus, O	2d Best	1 00

WOMAN'S WORK—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
		ARTS AND CRAFTS—AMATEUR—Concluded.	
		HAND-WROUGHT METAL.	
Carrie E. Mosteller	Newark, O.	Best Pair of Candlesticks	$2 00
Eva B. Mosteller	Newark, O.	Best Pair of Candleshades	2 00
Carrie E. Mosteller	Newark, O.	Best Desk Set—Blotter, Letter Holder, Ink Stand	2 00
Miss Mary Godard	Columbus, O.	2d Best	1 00
Miss Mary Godard	Columbus, O.	Best Specimen Silver	2 00
Eva B. Mosteller	Newark, O.	2d Best	1 00
Alice Acklev	Columbus, O.	Best Specimen, Brass	2 00
Miss Mary Godard	Columbus, O.	2d Best	1 00
Carrie E. Mosteller	Newark, O.	Best Specimen, Copper	2 00
Miss Mary Godard	Columbus, O.	2d Best	1 00
Eva B. Mosteller	Newark, O.	Best Specimen of Etching	2 00
Miss Mary Godard	Columbus, O.	2d Best	1 00
Eva B. Mosteller	Newark, O.	Best Display, Five Pieces	5 00
Edgar Parker	Columbus, O.	2d Best	3 00
		TOOLED LEATHER.	
Miss E. Louise Jenkins	Columbus, O.	Best Magazine Cover	2 00
Eva B. Mosteller	Newark, O.	2d Best	1 00
Nellie Parker	Columbus, O.	Best Desk Set	2 00
Nellie Parker	Columbus, O.	Best Table Mat	2 00
Mrs. E. L. Graham	Columbus, O.	2d Best	1 00
Eva B. Mosteller	Newark, O.	Best Card Case	2 00
Nellie Parker	Columbus, O.	2d Best	1 00
Eva B. Mosteller	Newark, O.	Best Shopping Bag	2 00
Nellie Parker	Columbus, O.	2d Best	1 00
Carrie E. Mosteller	Newark, O.	Best Small Purse	2 00
Nellie Parker	Columbus, O.	2d Best	1 00
Carrie E. Mosteller	Newark, O.	Best Belt	2 00
M. L. Johnson	Dayton, O.	Best Sofa Pillow	2 00
Nellie Parker	Columbus, O.	Best Specimen	2 00
Nellie Parker	Columbus, O.	2d Best	1 00
Mrs. J. W. Wilson	Norwood, O.	Best Specimen Book Binding	2 00
Nellie Parker	Columbus, O.	Best Display	5 00
		CHINA PAINTING—AMATEUR.	
Mabel Dunn	Columbus, O.	Best Chocolate Set	3 00
Mabel Dunn	Columbus, O.	Best Ice Cream Set	3 00
Adda B. Joyce	Columbus, O.	2d Best	1 00
Adda B. Joyce	Columbus, O.	Best Fish Set	3 00
Aurelia Brown	Columbus, O.	Best Six Large Plates	3 00
Mabel Brown	Columbus, O.	2d Best	1 00
Mrs. Henry H. Reymer	Bellefontaine, O.	Best Six Small Plates	3 00
Adda B. Joyce	Columbus, O.	2d Best	1 00
Aurelia Brown	Columbus, O.	Best Six Cups and Saucers	2 00
Virginia Wiltberger	Columbus, O.	2d Best	1 00
Virginia Wiltberger	Columbus, O.	Best Six After-dinner Coffee Cups	2 00
Mabel Dunn	Columbus, O.	2d Best	1 00
Mabel Dunn	Columbus, O.	Best Six Egg Cups	2 00
Aurelia Brown	Columbus, O.	Best Tea-pot, Sugar and Creamer	2 00
Mrs. G. E. Brittain	Dayton, O.	2d Best	1 00
Lulu Fuller	Columbus, O.	Best Chop Plate	2 00
Mrs. Henry H. Reymer	Bellefontaine, O.	Best Cake Plate	2 00
Lillian Fletcher	Columbus, O.	2d Best	1 00
R. E. Coe	Marion, O.	Best Salad Dish	2 00
Miss Della Finley	Columbus, O.	2d Best	1 00
Mrs. G. E. Brittain	Dayton, O.	Best Pitcher	2 00
Virginia Wiltberger	Columbus, O.	2d Best	1 00
Miss Helen Bright	Columbus, O.	Best Tankard or Claret Pitcher and Mug	2 00
Mrs. E. L. Graham	Columbus, O.	Best Loving Cup	2 00
Miss Helen Bright	Columbus, O.	Best Punch Bowl	3 00
Lulu Fuller	Columbus, O.	Best Tray	2 00
Virginia Wiltberger	Columbus, O.	2d Best	1 00
Mabel Dunn	Columbus, O.	Best Plaque	2 00
Miss Helen Bright	Columbus, O.	2d Best	1 00
Mrs. G. E. Brittain	Dayton, O.	Best Vase	2 00
Lillian Fletcher	Columbus, O.	2d Best	1 00
Adda B. Joyce	Columbus, O.	Best Jardiniere	2 00
Miss Helen Bright	Columbus, O.	2d Best	1 00
Mrs. Henry H. Reymer	Bellefontaine, O.	Best Fern Dish	2 00
Adda B. Joyce	Columbus, O.	Best Miniature	2 00
Mrs. G. E. Brittain	Dayton, O.	2d Best	1 00

WOMAN'S WORK—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
CHINA PAINTING—AMATEUR—Concluded			
Virginia Wiltberger...	Columbus, O.........	Best Specimen, Figure.................	$2 00
Mrs. Henry H. Reymer...............	Bellefontaine, O......	2d Best...........................	1 00
Belle P. Walton......	Columbus, O.........	Best Specimen of Paste Work..........	2 00
Mabel Dunn.........	Columbus, O.........	2d Best...........................	1 00
Adda B. Joyce.......	Columbus, O.........	Best Specimen of Enamel..............	2 00
Mrs. G. E. Brittain...	Dayton, O...........	2d Best...........................	1 00
R. E. Coe...........	Marion, O............	Best Specimen of Lustre...............	2 00
Mrs. G. E. Brittain...	Dayton, O...........	2d Best...........................	1 00
R. E. Coe...........	Marion, O............	Best Specimen of Conventional.........	2 00
Miss Helen Bright....	Columbus, O.........	2d Best...........................	1 00
Miss Helen Bright....	Columbus, O.........	Best Specimen........................	2 00
Virginia Wiltberger...	Columbus, O.........	2d Best...........................	1 00
Miss Helen Bright....	Columbus, O.........	Best Display, Ten Pieces...............	7 00
Virginia Wiltberger...	Columbus, O.........	2d Best...........................	4 00
ART NEEDLEWORK FOR PROFESSIONALS.			
Mrs. Cora Creamer....	Columbus, O.........	Best Single Specimen..................	5 00
Miss Cora Creamer....	Columbus, O.........	Best Display of Not Less Than Eight Pieces...........................	10 00
PYROGRAPHY—PROFESSONALS.			
C. C. Slater..........	Mechanicsburg, O.....	Best Specimen........................	7 00
Mrs. Jacob Becker....	Columbus, O.........	2d Best...........................	5 00
Mrs. Jacob Becker....	Columbus, O.........	Best Chair..........................	5 00
C. C. Slater..........	Mechanicsburg, O.....	2d Best...........................	3 00
Mrs. Chas. Groff......	Columbus, O.........	Best Display........................	10 00
C. C. Slater..........	Mechanicsburg, O.....	2d Best...........................	5 00
CHINA PAINTING FOR PROFESSIONALS.			
OTHER THAN FIGURE.			
Mrs. M. E. Wiltberger	Columbus, O.........	Best Lemonade Pitcher................	3 00
Geo. S. Hyde........	Piqua, O.............	2d Best...........................	2 00
L. C. Davis..........	Columbus, O.........	Best Panel..........................	3 00
Mrs. J. Anson Hopkins	Dayton, O...........	2d Best...........................	2 00
Mrs. M. E. Wiltberger	Columbus, O.........	Best Plaque.........................	3 00
Helen B. Windle.....	Columbus, O.........	2d Best...........................	2 00
Geo. S. Hyde........	Piqua, O.............	Best Conventional Design..............	3 00
L. C. Davis..........	Columbus, O.........	2d Best...........................	2 00
Mrs. L. K. Raney....	Troy, O..............	Best Tankard or Claret Pitcher and Mug	3 00
Geo. S. Hyde........	Piqua, O.............	2d Best...........................	2 00
Geo. S. Hyde........	Piqua, O.............	Best Punch Bowl.....................	3 00
Mrs. Chas. Augustus..	Columbus, O.........	2d Best...........................	2 00
Geo. S. Hyde........	Piqua, O.............	Best Vase...........................	3 00
Mrs. L. K. Raney....	Troy, O..............	2d Best...........................	2 00
Mrs. M. E. Wiltberger	Columbus, O.........	Best Six Cups and Saucers.............	3 00
Mrs. L. K. Raney....	Troy, O..............	2d Best...........................	2 00
Geo. S. Hyde........	Piqua, O.............	Best Six Large Plates.................	3 00
Mrs. L. K. Raney....	Troy, O..............	2d Best...........................	2 00
Mrs. M. E. Wiltberger	Columbus, O.........	Best Six Small Plates.................	3 00
Geo. S. Hyde........	Piqua, O.............	2d Best...........................	2 00
Mrs. L. K. Raney....	Troy, O..............	Best Specimen of Enamel..............	3 00
Geo. S. Hyde........	Piqua, O.............	2d Best...........................	2 00
Geo. S. Hyde........	Piqua, O.............	Best Specimen of Paste Work..........	3 00
Mrs. M. E. Wiltberger	Columbus, O.........	2d Best...........................	2 00
Geo. S. Hyde........	Piqua, O.............	Best Specimen of Lustre...............	3 00
Mrs. L. K. Raney....	Troy, O..............	2d Best...........................	2 00
Geo. S. Hyde........	Piqua, O.............	Best Specimen Showing Most Originalit	3 00
Mrs. J. Anson Hopkins	Dayton, O...........	2d Best...........................	2 00
Mrs. M. E. Wiltberger	Columbus, O.........	Best Display of China Painting, other than figure work, Six Pieces..........	10 00
Mabel Loomis Aulich.	Columbus, O.........	2d Best...........................	5 00
FIGURE WORK.			
Mrs. John F. Kreis...	Marion, O............	Best Portrait........................	3 00
Mrs. L. K. Raney....	Troy, O..............	2d Best...........................	2 00
Geo. S. Hyde........	Piqua, O.............	Best Figure.........................	3 00
Mabel Loomis Aulich.	Columbus, O.........	2d Best...........................	2 00
Mrs. John F. Kreis...	Marion, O............	Best Plaque.........................	3 00
Miss E. Louise Jenkins	Columbus, O.........	2d Best...........................	2 00
Geo. S. Hyde........	Piqua, O.............	Best Panel..........................	3 00
Mrs. John F. Kreis...	Marion, O............	2d Best...........................	2 00
Mrs. John F. Kreis...	Marion, O............	Best Vase...........................	3 00
E. Ellwanger........	Clintonville, O.......	2d Best...........................	2 00

WOMAN'S WORK—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
		CHINA PAINTING FOR PROFESSIONALS—Concluded.	
		FIGURE WORK.	
Mrs. John F. Kreis...	Marion, O............	Best Tankard........................	$3 00
Mrs. J. Anson Hopkins	Dayton, O............	2d Best..............................	2 00
Mrs. John F. Kreis...	Marion, O............	Best Stein...........................	3 00
Mrs. J. Anson Hopkins	Dayton, O............	2d Best..............................	2 00
Mrs. John F. Kreis...	Marion, O............	Best Miniature.......................	3 00
Mabel Loomis Aulich.	Columbus, O.........	2d Best..............................	2 00
Geo. S. Hyde........	Piqua, O.............	Best Display of China in Figure Work, Six Pieces........................	10 00
E. Ellwanger........	Clintonville, O......	2d Best.	5 00

PRESERVES, PICKLES, ETC.

Name of Owner.	Postoffice.	Awards.	Amount.
Mrs. W. Himmeger...	Marion, O............	Best Canned Tomatoes................	$1 00
Mrs. Louise Bonner...	Marion, O............	2d Best,.............................	50
Mrs. M. B. Clutter....	Centerburg, O........	Best Canned Blackberries.............	1 00
Mrs. Henry Bieber....	Delaware, O..........	2d Best..............................	50
Mrs. M. B. Clutter....	Centerburg, O........	Best Canned Raspberries..............	1 00
Mrs. Henry Bieber....	Delaware, O..........	2d Best..............................	50
Mrs. W. Himmeger....	Marion, O............	Best Canned Peaches..................	1 00
Mrs. Louise Bonner...	Marion, O............	2d Best..............................	50
Mrs. Louise Bonner...	Marion, O............	Best Canned Pears....................	1 00
Mrs. M. B. Clutter....	Centerburg, O........	2d Best..............................	50
Mrs. Hnery Bieber....	Delaware, O..........	Best Canned Apples...................	1 00
H. E. Stewart........	Thornville, O........	2d Best..............................	50
Mrs. Henry Bieber....	Delaware, O..........	Best Canned Quinces..................	1 00
Mrs. W. Himmeger...	Marion, O............	2d Best..............................	50
Mrs. Henry Bieber....	Delaware, O..........	Best Canned Strawberries.............	1 00
H. E. Stewart........	Thornville, O........	2d Best..............................	50
Mrs. M. B. Clutter....	Centerburg, O........	Best Canned Cherries.................	1 00
Mrs. W. Himmeger....	Marion, O............	2d Best..............................	50
Mrs. M. B. Clutter....	Centerburg, O........	Best Canned Gooseberries.............	1 00
Mrs. Henry Bieber....	Delaware, O..........	Best Canned Currants.................	1 00
Mrs. M. B. Clutter....	Centerburg, O........	2d Best..............................	50
Mrs. W. Himmeger....	Marion, O............	Best Canned Grapes...................	1 00
Mrs. M. B. Clutter....	Centerburg, O........	2d Best..............................	50
Mrs. M. B. Clutter....	Centerburg, O........	Best Canned Plums....................	1 00
Mary Stewart........	Jacksontown, O.......	2d Best..............................	50
Mrs. Henry Bieber....	Delaware, O..........	Best Canned Peas.....................	1 00
Mrs. M. B. Clutter....	Centerburg, O........	2d Best..............................	50
Mrs. W. Himmeger....	Marion, O............	Best Canned Beans....................	1 00
Mrs. Henry Bieber....	Delaware, O..........	2d Best..............................	50
Mrs. M. B. Clutter....	Centerburg, O........	Best Canned Rhubarb..................	1 00
H. E. Stewart........	Thornville, O........	2d Best..............................	50
Mrs. M. B. Clutter....	Centerburg, O........	Best Canned Corn in Ear or Otherwise..	1 00
Mrs. W. Himmeger....	Marion, O............	2d Best..............................	50
Mrs. C. S. Armstrong..	Columbus, O	Best Blackberry Jelly................	1 00
Mrs. Henry Bieber....	Delaware, O..........	2d Best..............................	50
Mary Stewart........	Jacksontown, O.......	Best Cherry Jelly....................	1 00
Mrs. M. B. Clutter....	Centerburg, O........	2d Best..............................	50
H. E. Stewart........	Thornville, O........	Best Cranberry Jelly.................	1 00
Mrs. Henry Bieber....	Delaware, O..........	2d Best..............................	50
Mrs. W. B. Smith....	Columbus, O..........	Best Grape Jelly.....................	1 00
Mrs. M. B. Clutter....	Centerburg, O........	2d Best..............................	50
Mrs. C. S. Armstrong..	Columbus, O..........	Best Raspberry Jelly.................	1 00
Mrs. Louise Bonner...	Marion, O............	2d Best..............................	50
Mrs. Henry Bieber....	Delaware, O..........	Best Strawberry Jelly................	1 00
H. E. Stewart........	Thornville, O........	2d Best..............................	50
Mary Stewart........	Jacksontown, O.......	Best Apple Jelly.....................	1 00
Mrs. W. B. Smith....	Columbus, O..........	2d Best..............................	50
H. E. Stewart........	Thornville, O........	Best Pear Jelly......................	1 00
Mrs. Henry Bieber....	Delaware, O..........	2d Best..............................	50
Mrs. D. J. Coyner....	Lyndon, O............	Best Crab Apple Jelly................	1 00
Mrs. Louise Bonner...	Marion, O............	2d Best..............................	50
Mrs. Henry Bieber....	Delaware, O..........	Best Currant Jelly...................	1 00
Mrs. W. Himmeger....	Marion, O............	2d Best..............................	50
Mrs. Louise Bonner...	Marion, O............	Best Peach Jelly.....................	1 00
Mrs. Henry Bieber....	Delaware, O..........	2d Best..............................	50
Mrs. C. S. Armstrong.	Columbus, O..........	Best Quince Jelly....................	1 00
Mrs. Louise Bonner...	Marion, O............	2d Best..............................	50

WOMAN'S WORK—Continued.

PRESERVES, PICKLES, ETC.—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
Mrs. R. M. Colley	Columbus, O	Best Plum Jelly	$1 00
Mrs. Henry Bieber	Delaware, O	2d Best	50
Mrs. M. B. Clutter	Centerburg, O	Best Lemon Jelly	1 00
Mrs. Louise Bonner	Marion, O	2d Best	50
Mrs. M. B. Clutter	Centerburg, O	Best Pineapple Jelly	1 00
Mrs. C. S. Armstrong	Columbus, O	Best Rhubarb Jelly	1 00
Mrs. W. B. Smith	Columbus, O	2d Best	50
Miss Fannie Fearn	Groveport, O	Best Gooseberry Jelly	1 00
Mrs. R. M. Colley	Columbus, O	2d Best	50
Miss Minnie Bieber	Delaware, O	Best Preserved Quinces	2 00
Mrs. Henry Bieber	Delaware, O	2d Best	1 00
H. E. Stewart	Thornville, O	Best Preserved Pears	2 00
Mrs. M. B. Clutter	Centerburg, O	2d Best	1 00
Mary Stewart	Jacksontown, O	Best Preserved Apples	2 00
Mrs. Henry Bieber	Delaware, O	2d Best	1 00
Mrs. M. B. Clutter	Centerburg, O	Best Preserved Plums	2 00
Miss Fannie Fearn	Groveport, O	2d Best	1 00
Mrs. M. B. Clutter	Centerburg, O	Best Preserved Cherries	2 00
Mrs. Henry Bieber	Delaware, O	2d Best	1 00
Mrs. R. M. Colley	Columbus, O	Best Preserved Crab Apples	2 00
Mrs. Henry Bieber	Delaware, O	2d Best	1 00
Mrs. M. B. Clutter	Centerburg, O	Best Preserved Grapes	2 00
Mary Stewart	Jacksontown, O	2d Best	1 00
Mrs. Henry Bieber	Delaware, O	Best Preserved Strawberries	2 00
Mrs. M. B. Clutter	Centerburg, O	2d Best	1 00
Miss Fannie Fearn	Groveport, O	Best Preserved Blackberries	2 00
Mary Stewart	Jacksontown, O	2d Best	1 00
Mrs. R. M. Colley	Columbus, O	Best Preserved Peaches	2 00
Miss Minnie Bieber	Delaware, O	2d Best	1 00
Miss Fannie Fearn	Groveport, O	Best Preserved Currants	2 00
Mary Stewart	Jacksontown, O	2d Best	1 00
Mrs. Henry Bieber	Delaware, O	Best Preserved Gooseberries	2 00
Miss Fannie Fearn	Groveport, O	2d Best	1 00
Mrs. M. B. Clutter	Centerburg, O	Best Preserved Melons	2 00
H. E. Stewart	Thornville, O	2d Best	1 00
Mary Stewart	Jacksontown, O	Best Preserved Pineapples	2 00
Mrs. M. B. Clutter	Centerburg, O	2d Best	1 00
Mrs. Henry Bieber	Delaware, O	Best Preserved Cranberries	2 00
Mrs. W. Himmeger	Marion, O	2d Best	1 00
Mary Stewart	Jacksontown, O	Best Pickled Cucumbers	2 00
Mrs. M. B. Clutter	Centerburg, O	2d Best	1 00
Mrs. M. B. Clutter	Centerburg, O	Best Pickled Peaches	2 00
H. E. Stewart	Thornville, O	2d Best	1 00
Mrs. Henry Bieber	Delaware, O	Best Pickled Pears	2 00
Mrs. M. B. Clutter	Centerburg, O	2d Best	1 00
H. E. Stewart	Thornville, O	Best Pickled Tomatoes	2 00
Mrs. Henry Bieber	Delaware, O	2d Best	1 00
Mary Stewart,	Jacksontown, O	Best Pickled Melon Mangoes	2 00
Mrs. Henry Bieber	Delaware, O	2d Best	1 00
Mrs M. B. Clutter	Centerburg, O	Best Pickled Pepper Mangoes	2 00
Mrs. W. Himmeger	Marion, O	2d Best	1 00
Mrs. M. B. Clutter	Centerburg, O	Best Pickled Melons	2 00
Mary Stewart	Jacksontown, O	2d Best	1 00
Mrs. M. B. Clutter	Centerburg, O	Best Pickled Onions	2 00
Mrs. W. Himmeger	Marion, O	2d Best	1 00
Mrs. M. B. Clutter	Centerburg, O	Best Pickled Gherkins	2 00
Mrs. Henry Bieber	Delaware, O	2d Best	1 00
Mrs. Louise Bonner	Marion, O	Best Pickled Cauliflower	2 00
H. E. Stewart	Thornville, O	2d Best	1 00
Mrs. W. Himmeger	Marion, O	Best Mixed Pickles	2 00
Mary Stewart	Jacksontown, O	2d Best	1 00
Mrs. Louise Bonner	Marion, O	Best Tomato Catsup	2 00
Mrs. Henry Bieber	Delaware, O	2d Best	1 00
Mrs. Henry Bieber	Delaware, O	Best Cucumber Catsup	2 00
Mrs. M. B. Clutter	Centerburg, O	2d Best	1 00
Mrs. M. B. Clutter	Centerburg, O	Best Cold Tomato Catsup	2 00
Mrs. Henry Bieber	Delaware, O	2d Best	1 00
Mrs. Louise Bonner	Marion, O	Best Chili Sauce	2 00
H. E. Stewart	Thornville, O	2d Best	1 00
Mrs. W. Himmeger	Marion, O	Best Chow Chow	2 00
Mary Stewart	Jacksontown, O	2d Best	1 00
H. E. Stewart	Thornville, O	Best Cucumber Relish	1 00
Mrs. M. B. Clutter	Centerburg, O	2d Best	50
Mary Stewart	Jacksontown, O	Best Peach Butter	2 00
Mrs. Henry Bieber	Delaware, O	2d Best	1 00
Mrs. J. H. Hawkins	Xenia, O	Best Apple Butter	2 00
Mrs. M. B. Clutter	Centerburg, O	2d Best	1 00
Mrs. Henry Bieber	Delaware, O	Best Quince Butter	2 00
H. E. Stewart	Thornville, O	2d Best	1 00

WOMAN'S WORK—Continued.

Name of Owner.	Postoffice.	Awards.	Amount.
		PRESERVES, PICKLES, ETC.—Concluded.	
Mrs. Henry Bieber....	Delaware, O..........	Best Plum Butter...................	$2 00
Mrs. Louise Bonner...	Marion, O............	2d Best............................	1 00
Mrs. Henry Bieber....	Delaware, O..........	Best Pear Butter...................	2 00
Mrs. M. B. Clutter....	Centerburg, O........	2d Best............................	1 00
Mary Stewart........	Jacksontown, O.......	Best Grape Butter..................	2 00
H. E. Stewart........	Thornville, O.........	2d Best............................	1 00
Miss Minnie Bieber...	Delaware, O..........	Best Peach Marmalade...............	2 00
Mrs. J. H. Hawkins....	Xenia, O.............	2d Best............................	1 00
Mrs. Henry Bieber....	Delaware, O..........	Best Quince Marmalade..............	2 00
Mrs. M. B. Clutter....	Centerburg, O........	2d Best............................	1 00
Mrs. Louise Bonner...	Marion, O............	Best Crab Apple Marmalade..........	2 00
Mary Stewart........	Jacksontown, O.......	2d Best............................	1 00
Mrs. Louise Bonner...	Marion, O............	Best Orange Marmalade..............	2 00
Mrs. M. B. Clutter....	Centerburg, O........	2d Best............................	1 00
Mrs. M. B. Clutter....	Centerburg, O........	Best Pear Marmalade................	2 00
Miss Minnie Bieber...	Delaware, O..........	2d Best............................	1 00
Mrs. M. B. Clutter....	Centerburg, O........	Largest and Best Variety Canned Fruit..	5 00
Mrs. W. Himmeger....	Marion, O............	2d Largest and Best................	3 00
H. E. Stewart........	Thornville, O.........	Largest and Best Variety Pickles.......	5 00
Mrs. M. B. Clutter....	Centerburg, O........	2d Largest and Best................	3 00
Mrs. M. B. Clutter....	Centerburg, O........	Largest and Best Variety Jellies........	5 00
Mrs. W. Himmeger...	Marion, O............	2d Largest and Best................	3 00
Mrs. M. B. Clutter....	Centerburg, O........	Largest and Best Variety Preserves.....	5 00
Mary Stewart........	Jacksontown, O.......	2d Largest and Best................	3 00
H. E. Stewart........	Thornville, O.........	Best Display of Butters, Twenty Varieties............................	5 00
Mrs. M. B. Clutter....	Centerburg, O........	2d Best............................	3 00
Mrs. Louise Bonner...	Marion, O............	Best Display of Marmalades, Twenty Varieties..........................	5 00
Mary Stewart........	Jacksontown, O.......	2d Best............................	3 00

CEREAL FOODS.

Name of Owner.	Postoffice.	Awards.	Amount.
		DOMESTIC BAKING.	
Mrs. E. P. Wright....	Columbus, O..........	Best Yeast Bread..................	$2 00
Mrs. M. B. Clutter....	Centerburg, O........	2d Best...........................	1 00
Mrs. Henry Bieber....	Delaware, O..........	Best Salt Rising Bread.............	2 00
Mrs. M. B. Clutter....	Centerburg, O........	2d Best...........................	1 00
Mrs. E. P. Wright....	Columbus, O..........	Best Corn Bread...................	2 00
Mrs. J. H. Hawkins....	Xenia, O.............	2d Best...........................	1 00
Mary Stewart........	Jacksontown, O.......	Best Rye Bread....................	2 00
H. E. Stewart........	Thornville, O.........	2d Best...........................	1 00
Mrs. J. H. Hawkins....	Xenia, O.............	Best Brown Bread..................	2 00
H. E. Stewart........	Thornville, O.........	2d Best...........................	1 00
		LOAF CAKES.	
Mrs. M. B. Clutter....	Centerburg, O........	Best Black Fruit...................	3 00
Mary Stewart........	Jacksontown, O.......	2d Best...........................	2 00
H. E. Stewart........	Thornville, O.........	Best White Fruit..................	2 00
Miss Minnie Bieber...	Delaware, O..........	2d Best...........................	1 00
Mary Stewart........	Jacksontown, O.......	Best White........................	2 00
Mrs. E. P. Wright ...	Columbus, O..........	2d Best...........................	1 00
H. E. Stewart........	Thornville, O.........	Best Marble.......................	2 00
Mrs. R. M. Colley.....	Columbus, O..........	2d Best...........................	1 00
Miss Minnie Bieber...	Delaware, O..........	2d Best Pound.....................	1 00
Miss Minnie Bieber...	Delaware, O..........	Best Coffee.......................	2 00
H. E. Stewart........	Thornville, O.........	2d Best...........................	1 00
Mrs. M. B. Clutter....	Centerburg, O........	Best Nut..........................	2 00
Mary Stewart........	Jacksontown, O.......	2d Best...........................	1 00
Mrs. N. J. Corer......	Mt. Gilead, O.........	Best Angel........................	2 00
Mrs. M. B. Clutter....	Centerburg, O........	2d Best...........................	1 00
Mrs. Henry Bieber....	Delaware, O..........	Best Sponge.......................	2 00
Mrs. M. B. Clutter....	Centerburg, O........	2d Best...........................	1 00
Mrs. Henry Bieber....	Delaware, O..........	Best Sunshine.....................	2 00
Mary Stewart........	Jacksontown, O.......	2d Best...........................	1 00

WOMAN'S WORK—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
CEREAL FOODS—Concluded..			
LAYER CAKES.			
Mrs. J. H. Hawkins	Xenia, O	Best Chocolate	$2 00
Mary Stewart	Jacksontown, O	2d Best	1 00
H. E. Stewart	Thornville, O	Best Caramel	2 00
Miss Minnie Bieber	Delaware, O	2d Best	1 00
Mary Stewart	Jacksontown, O	Best Cocoanut	2 00
Miss Minnie Bieber	Delaware, O	2d Best	1 00
H. E. Stewart	Thornville, O	Best Almond	2 00
Mrs. W. Himmeger	Marion, O	2d Best	1 00
Mrs. R. A. Dale	Columbus, O	Best Devil	2 00
Mrs. Henry Bieber	Delaware, O	2d Best	1 00
Miss Minnie Bieber	Delaware, O	Best Fig	2 00
H. E. Stewart	Thornville, O	2d Best	1 00
Mrs. W. Himmeger	Marion, O	Best Ribbon	2 00
H. E. Stewart	Thornville, O	2d Best	1 00
Mrs. J. H. Hawkins	Xenia, O	Best Any Other Kind	2 00
Mary Stewart	Jacksontown, O	2d Best	1 00
MISCELLANEOUS.			
Mrs. M. B. Clutter	Centerburg, O	Best One Dozen Plain Snaps	1 00
Mrs. Henry Bieber	Delaware, O	2d Best	50
Mrs. R. A. Dale	Columbus, O	Best One Dozen Cookies	1 00
Mrs. N. J. Corer	Mt. Gilead, O	2d Best	50
Mrs. M. B. Clutter	Centerburg, O	Best One Dozen Doughnuts	1 00
Miss Minnie Bieber	Delaware, O	2d Best	50
Mrs. M. B. Clutter	Centerburg, O	Best One Dozen Love Pies	1 00
Mrs. Louise Bonner	Marion, O	2d Best	50
Mrs. E. P. Wright	Columbus, O	Best One Dozen Ginger Snaps	1 00
Mrs. Minnie Bieber	Delaware, O	2d Best	50
CONFECTIONS—HOME MADE.			
Mrs. W. Himmeger	Marion, O	Best One Pound French Creams	1 00
Miss Minnie Bieber	Delaware, O	2d Best	50
Mary Stewart	Jacksontown, O	Best One Pound Fudges	1 00
Mrs. J. H. Hawkins	Xenia, O	2d Best	50
Mrs. W. Himmeger	Marion, O	Best One Pound Maple Balls	1 00
Mrs. M. B. Clutter	Centerburg, O	2d Best	50
Mrs. W. Himmeger	Marion, O	Best One Pound Chocolate Creams	1 00
Mrs. J. H. Hawkins	Xenia, O	2d Best	50
J. F. Bartholomew	Huntsburg, O	Best One Pound Nut Candy	1 00
Mrs. J. H. Hawkins	Xenia, O	2d Best	50
Mrs. G. E. Brittain	Dayton, O	Best One Pound Taffy	1 00
Mrs. M. B. Clutter	Centerburg, O	2d Best	50
Mrs. J. H. Hawkins	Xenia, O	2d Best Pound Chocolate Caramels	50
Viola R. Fox	Springfield, O	Best One Pound Candied Lemon or Orange Peel	1 00
Mrs. M. B. Clutter	Centerburg, O	2d Best	50
Miss Minnie Bieber	Delaware, O	Best One Pound Almond Macaroons	1 00
Mrs. M. B. Clutter	Centerburg, O	2d Best	50
Mrs. Louise Bonner	Marion, O	Best One Pound Hickorynut Macaroons	1 00
Miss Minnie Bieber	Delaware, O	2d Best	50

TWELFTH DEPARTMENT—FINE ARTS.

A. P. SANDLES, Member in Charge.

PAINTINGS, DRAWINGS, ETC.—OPEN TO ALL.

OIL PAINTINGS.

Name of Owner.	Postoffice.	Awards.	Amount.
F. Nelson Vance	Crawfordsville, Ind	Best Portrait	$8 00
Mrs. L. K. Raney	Troy, O	2d Best	4 00
Henry Fenstermacher	Springfield, O	Best Animal Study	8 00
Frank Miller	Columbus, O	2d Best	4 00
Mrs. Chas. Augustus	Columbus, O	Best Full Length Figure	5 00
Henry Fenstermacher	Springfield, O	2d Best	3 00
S. Keifer	Columbus, O	Best Landscape	5 00
Mrs. Chas. Augustus	Columbus, O	2d Best	3 00
Mary Russell	Springfield, O	Best Fruit Piece	5 00
F. Nelson Vance	Crawfordsville, Ind	2d Best	3 00
Mary Russell	Springfield, O	Best Flower Piece	5 00
Henry Fenstermacher	Springfield, O	2d Best	3 00
F. Nelson Vance	Crawfordsville, Ind	Best Still Life Study	5 00
Henry Fenstermacher	Springfield, O	2d Best	3 00
F. Nelson Vance	Crawfordsville, Ind	Best Exhibition of Oil Paintings, Six Pieces, Not Otherwise Entered	15 00
Henry Fenstermacher	Springfield, O	2d Best	5 00

WATER COLOR PAINTINGS.

Name of Owner.	Postoffice.	Awards.	Amount.
Miss Daisy M. Scott	Columbus, O	Best Portrait	5 00
Mary Russell	Springfield, O	2d Best	3 00
Mary Russell	Springfield, O	Best Full Length Figure	4 00
Miss E. Louise Jenkins	Columbus, O	2d Best	2 00
Mrs. Chas. Augustus	Columbus, O	Best Landscape	4 00
Mrs. Chas. N. Hunter	Springfield, O	2d Best	2 00
Mrs. L. K. Raney	Troy, O	Best Fruit Piece	4 00
Mary Russell	Springfield, O	2d Best	2 00
Miss E. Louise Jenkins	Columbus, O	Best Flower Piece	4 00
Mrs. L. K. Raney	Troy, O	2d Best	2 00
Mary Russell	Springfield, O	Best Marine Study	4 00
Mrs. Chas. N. Hunter	Springfield, O	2d Best	2 00
F. Nelson Vance	Crawfordsville, Ind	Best Still Life Study	4 00
Mrs. Chas. N. Hunter	Springfield, O	2d Best	2 00
Miss E. Louise Jenkins	Columbus, O	Best Exhibition of Paintings in Water Colors, Six Pieces, Not Otherwise Entered	10 00
Mrs. Chas. N. Hunter	Springfield, O	2d Best	5 00

PASTELS.

Name of Owner.	Postoffice.	Awards.	Amount.
F. Nelson Vance	Crawfordsville, Ind	Best Portrait	3 00
Maud Myers	Columbus, O	2d Best	2 00
Mrs. L. K. Raney	Troy, O	Best Landscape	3 00
Henry Fenstermacher	Springfield, O	2d Best	2 00
Mary Russell	Springfield, O	Best Animal	3 00
Henry Fenstermacher	Springfield, O	2d Best	2 00
Mary Russell	Springfield, O	Best Game	3 00
Mrs. L. K. Raney	Troy, O	2d Best	2 00
Mary Russell	Springfield, O	Best Fruit	3 00
Eva B. Mosteller	Newark, O	2d Best	2 00
Eva B. Mosteller	Newark, O	Best Still Life	3 00
Henry Fenstermacher	Springfield, O	2d Best	2 00
Henry Fenstermacher	Springfield, O	Best Figure	3 00
Mary Russell	Springfield, O	2d Best	2 00

DRAWINGS.

Name of Owner.	Postoffice.	Awards.	Amount.
Maud Myers	Columbus, O	Best Portrait, Crayon or Charcoal	2 00
F. Nelson Vance	Crawfordsville, Ind	2d Best	1 00
Eva B. Mosteller	Newark, O	Best Pen and Ink Drawing, Still Life	2 00
Mr. A. Pharo Gagge	Columbus, O	Best Architectural Drawings	Medal

FINE ARTS—Continued.

PAINTINGS, DRAWINGS, ETC.—AMATEUR.

OIL PAINTINGS.

Name of Owner.	Postoffice.	Awards.	Amount.
Chrissie Fenstermacher	Springfield, O.	Best Portrait	$5 00
Miss Alice Kunkel	Greenville, O.	2d Best	3 00
Corynne Snyder	Columbus, O.	Best Full Length Figure	3 00
Helen Hoover	Columbus, O.	2d Best	1 00
Corynne Snyder	Columbus, O.	Best Animal Study	3 00
M. L. Johnson	Dayton, O.	2d Best	1 00
Mrs. S. E. Gaskell	Ashtabula, O.	Best Landscape	3 00
Corynne Snyder	Columbus, O.	2d Best	1 00
E. H. Hill	Columbus, O.	Best Fruit Piece	3 00
Miss Alice Kunkel	Greenville, O.	2d Best	1 00
Corynne Snyder	Columbus, O.	Best Flower Piece	3 00
M. L. Johnson	Dayton, O.	2d Best	1 00
E. H. Hill	Columbus, O.	Best Still Life Study	3 00
Corynne Snyder	Columbus, O.	2d Best	1 00
Mrs. S. E. Gaskell	Ashtabula, O.	Best Exhibition of Oil Paintings, Six or More Pieces, Not Otherwise Entered	10 00
Miss Alice Kunkel	Greenville, O.	2d Best	5 00

WATER COLOR PAINTINGS.

Name of Owner.	Postoffice.	Awards.	Amount.
Miss Alice Kunkel	Greenville, O.	Best Portrait	4 00
Mrs. Winifred Austin Shick	Crawfordsville, Ind.	2d Best	2 00
Corynne Snyder	Columbus, O.	Best Full Length Figure	3 00
Mrs. Winifred Austin Shick	Crawfordsville, Ind.	2d Best	1 00
Mrs. G. E. Brittain	Dayton, O.	Best Ohio Landscape	3 00
Aurelia Brown	Columbus, O.	2d Best	1 00
Florence Bethel	Columbus, O.	Best Landscape (summer study)	3 00
Berth T. Caler	Columbus, O.	2d Best	1 00
Mrs. E. L. Graham	Columbus, O.	Best Flower Piece	3 00
Berth T. Caler	Columbus, O.	2d Best	1 00
Berth T. Caler	Columbus, O.	Best Fruit Piece	3 00
Miss Helen Bright	Columbus, O.	2d Best	1 00
Miss Helen Ralph	Springfield, O.	Best Marine Study	3 00
Mrs. E. L. Graham	Columbus, O.	2d Best	1 00
R. E. Coe	Marion, O.	Best Still Life Study	3 00
Carrie E. Mostelier	Newark, O.	2d Best	1 00
Miss Alice Kunkel	Greenville, O.	Best Exhibition of Painting in Water Colors, Six or More Pieces, Not otherwise Entered	8 00
Corynne Snyder	Columbus, O.	2d Best	4 00

PASTELS.

Name of Owner.	Postoffice.	Awards.	Amount.
Mrs. G. E. Brittain	Dayton, O.	Best Portrait	3 00
Chrissie Fenstermacher	Springfield, O.	2d Best	2 00
Marie Steinhopp	Columbus, O.	Best Landscape	2 00
Marie Steinhopp	Columbus, O.	2d Best	1 00
Mrs. G. E. Brittain	Dayton, O.	Best Animal	2 00
Chrissie Fenstermacher	Springfield, O.	2d Best	1 00
Mrs. G. E. Brittain	Dayton, O.	Best Game	2 00
Miss Helen Ralph	Springfield, O.	2d Best	1 00
Chrissie Fenstermacher	Springfield, O.	Best Fruit	2 00
Marie Steinhopp	Columbus, O.	2d Best	1 00
Chrissie Fenstermacher	Springfield, O.	Best Still Life	2 00
Florence Bethel	Columbus, O.	2d Best	1 00
Mrs. G. E. Brittain	Dayton, O.	Best Figure	2 00
Mrs. J. Anson Hopkins	Dayton, O.	2d Best	1 00
Mrs. S. E. Gaskell	Ashtabula, O.	Best Autumn Landscape	2 00
Carrie E. Mosteller	Newark, O.	2d Best	

DRAWINGS.

Name of Owner.	Postoffice.	Awards.	Amount.
Mrs. J. Anson Hopkins	Dayton, O.	Best Portrait, Crayon or Charcoal	2 00
Miss Anna Scott	Columbus, O.	2d Best	1 00
Mrs. G. E. Gaskell	Ashtabula, O.	Best Landscape, Crayon or Charcoal	2 00
Miss Anna Scott	Columbus, O.	2d Best	1 00
Mrs. J. Anson Hopkins	Dayton, O.	Best Still Life, Crayon or Charcoal	2 00
Miss Anna Scott	Columbus, O.	2d Best	1 00
Miss Angie Early	Columbus, O.	Best Drawing from Cast, Crayon or Charcoal	2 00
Miss Anna Scott	Columbus, O.	2d Best	1 00

FINE ARTS—Concluded.

Name of Owner.	Postoffice.	Awards.	Amount.
		DRAWINGS—Concluded.	
Chrissie Fenstermacher	Springfield, O.	Best Pen and Ink Drawing, Full Length Figure	$2 00
Miss Anna Scott	Columbus, O.	2d Best	1 00
Mrs. Winifred Austin Shick	Crawfordsville, Ind.	Best Pen and Ink Drawing, Still Life	2 00
Chrissie Fenstermacher	Springfield, O.	2d Best	1 00
Mrs. G. E. Brittain	Dayton, O.	Best Pen and Ink Landscape	2 00
Mrs. J. Anson Hopkins	Dayton, O.	2d Best	1 00
Chrissie Fenstermacher	Springfield, O.	Best Pencil Drawing, Still Life	2 00
Miss Anna Scott	Columbus, O.	2d Best	1 00
Chrissie Fenstermacher	Springfield, O.	Best Pencil Drawing, Flower Piece	2 00
Hester C. Harris	Springfield, O.	2d Best	1 00
Chrissie Fenstermacher	Springfield, O.	Best Pencil Drawing, from Figure	2 00
Miss Anna Scott	Columbus, O.	2d Best	1 00
Corynne Snyder	Columbus, O.	Best Pencil Drawing from Cast	2 00
Corynne Snyder	Columbus, O.	2d Best	1 00
Mrs. Winifred Austin Shick	Crawfordsville, Ind.	Best Display of Drawings in Pencil, Charcoal, Crayon or Brush, Not Otherwise Entered	4 00
		PHOTOGRAPHY.	
James E. Taggart	Delaware, O.	Best Landscape, Two Prints, 5x7	2 00
Geo. A. Smith	St. Louis, Mo.	2d Best	1 00
M. K. Bowman	Columbus, O.	Best Animal Two Prints, 5x7	2 00
Miss Helen Ralph	Springfield, O.	2d Best	1 00
James E. Taggart	Delaware, O.	Best Composition, Two Prints, 5x7	2 00
Geo. A. Smith	St. Louis, Mo.	2d Best	1 00
M. K. Bowman	Columbus, O.	Best Landscape, Two Prints, 4x5	2 00
Miss Helen Ralph	Springfield, O.	2d Best	1 00
M. K. Bowman	Columbus, O.	Best Animal, Two Prints, 4x5	2 00
Miss Helen Ralph	Springfield, O.	2d Best	1 00
James E. Taggart	Delaware, O.	Best Composition, Two Prints, 4x5	2 00
Geo. A. Smith	St. Louis, Mo.	2d Best	1 00
Miss Annie W. Russell	Springfield, O.	Best Six Prints, 3½x3½	2 00
Geo. A. Smith	St. Louis, Mo.	2d Best	1 00
M. K. Bowman	Columbus, O.	Best Portrait, Any Size	2 00
James E. Taggart	Delaware, O.	2d Best	1 00
Miss Helen Ralph	Springfield, O.	Best Harvest Scene, Any Size	2 00
James E. Taggart	Delaware, O.	2d Best	1 00
M. K. Bowman	Columbus, O.	Best Display of Five Prints, 4x5 or larger	4 00
Mrs. J. Anson Hopkins	Dayton, O.	2d Best	2 00

EXHIBITS IN NON-PREMIUM DEPARTMENTS.

MACHINERY AND AGRICULTURAL IMPLEMENTS.

P. G. Ewart, Member in Charge.

Adams, J. D., & Co., Columbus, O.	King Road Machine and Rooter.
Anthony Fence Co., Tecumseh, Mich	Farm Fence and Gates.
Appleton Mfg. Co., Batavia, Ill	Farm Machinery.
American Drill Co., Marion, Ind.	Drills.
Ashland Steel Range & Mfg. Co., Ashland, O	Steel Ranges.
Baker, A. D., Co., Swanton, O.	Baker Traction Engine and Separator
Beach Mfg. Co., Charlotte, Mich.	Triple Expansion Iron Road Culverts
Bennett, H. L., & Co., Westerville, O.	Corn Harvesters and Stump Pullers.
Bird, F. W., & Son, East Walpole, Mass	Paroid Roofing. Waterproof Paper, etc.
Birdsell Mfg. Co., South Bend, Ind	Birdsell Wagons.
Brown-Cochran Co., Lorain, O.	Gasoline Engines.
Brown-Manly Plow Co. Columbus, O.	Plows, Harrows, Rollers, etc
Buckeye Fertilizer Co., Columbus, O.	Fertilizer.
Buffalo Hay Press Co.	Buffalo Hay Press in Operation.
Brown Mfg. Co., The, Zanesville, O.	Wagons and Implements.
Bruner Steel Wagon Co., Wapakoneta, O.	Steel Farm Wagon Gears and Log Wagons.
Buick Motor Co., Flint, Mich	Motors.
Bimel Buggy Co., Sidney, O.	Buggies and Carriages.
Columbus Plow Co., Columbus, O	Plows, Harrows.
Champion Potato Machinery Co., Hammond, Ind.	Potato Machinery, Diggers, Planters, etc.
Case Plow Works, The J. I., Racine, Wis.	Plows, Harrows, etc.
Cook Motor Co., Delaware, O.	Motor Gasoline Engines.
Columbus Machine Co., Columbus, O.	Gasoline Engines.
Champion Evaporator Co., Hudson, O.	Champion Evaporator.
Collins Plow Co., Quincy, Ill.	Power Presses, Gasoline Engines.
Colvin, Chase, South Charleston, O	Farm Fence, Anchor Posts.
Columbus Cement Stone Co., Columbus, O	Concrete Block Building.
Coquillard Wagon Co., Henderson, Ky.	Coquillard Wagons.
Commercial Motor Truck Co., Plymouth, O.	Motor Trucks, Motor Delivery Wagons etc.
Columbus Roofing & Supply Co., Columbus, O.	Roofing and Asbestos Pipe Covering.
Columbus Hoop Co., Columbus, O.	Patent Coiled Elm Hoops and Headliners.
Clay Mfg. Co., Columbus, O	Machinery.
Corn Products Mfg. Co., Chicago, Ill.	Manufactured Products.
Compton Mfg. Co., Waukesha, Wis.	Manure Loader.
Dayton Pitless Scale Co., Dayton, O.	Dayton Pitless Scale.
Erskine Portable Derrick Co., Madison Mills, O.	Erskine Portable Derrick in Operation
Edwards Auto Co.	
Fairbanks, Morse & Co., Cincinnati, O	Fairbanks Scales, Hay Press, etc.
Flint and Walling Mfg. Co., Columbus, O.	Wind Mills, Pumps, etc.
Foos Mfg.. Co, Springfield, O	Gasoline Engines, Feed Grinders, etc.
Farmers' Co-operative Harvesting Machine Co., Springfield, O.	Mowers, Tedders, Harrows, etc.
Francisco Concrete Block Mfg. Co., Columbus, O.	Concrete Block Machines.
Frick Co., Waynesboro, Pa.	Traction Engines, Separators, etc.
Farmers' Independent Fert. Co., Columbus, O.	Fertilizer.
Foote Foundry Co., J. B., Fredericktown, O.	Machinery.
Geiser Mfg. Co., Waynesboro, Pa	Engines, Separators, Hullers, etc.
Gunther, John, Wapakoneta, O	Machinery.
Galion Iron Works Co., Galion, O	Culvert Pipe, Road Makers' Supplies.
Hurst Co., The Chas. B., Chillicothe, O.	Cement Water Tanks, Stock Scales, etc.
Hoover-Prout Co., Avery, O.	Hoover-Prout Potato Digger.

Hench and Dromgold Co., York, Pa	Cultivators, Harrows, Corn Shellers. etc.
Heller-Aller Co., Napoleon, O	Wind Mills, Tank Heaters, etc.
Harrison & Co., W. R., Massillon, O	Corn Shellers, Trucks, etc.
Huber Mfg. Co., Marion, O	Traction Engines, Separators, etc.
Hayden Automatic Block Machine Co	Block Machines, Concrete Mixers.
Hist Mfg. Co., Barberton, O	Hist Potato Digger.
Hastings Industrial Co., Chicago, Ill	Cream Separators.
Huntsberger & Hour, Mt. Vernon, O	One Man Cross Cut Saw and Churn.
Indiana Road Machine Co., Ft. Wayne, Ind	Stone Crushers, Road Graders, etc.
International Fence and Fireproofing Co., Columbus, O	Farm and Lawn Fence Gates.
Ideal Concrete Machinery Co	Concrete Block, Post and Tile Machines.
Isham-Miller Co., Butternut, Mich	Expanding Iron Road Culvert.
Independent Packers Fert. Co., E. Columbus, O	Fertilizer.
Jaeger Machine Co., Columbus, O	Concrete Mixer Machines.
Keystone Farm Machine Co	Cultivators and Weeders.
Kenney Machinery Co., Indianapolis, Ind	Corn Huskers, Gasoline Engines, etc.
Kansas City Hay Press & Machinery Co., Columbus, O	Gasoline Engines, Scales, Hay Presses.
Kelly-Springfield Road Roller Co., Springfield, O	Rollers in Operation.
London Machinery Co., Fairfield, Ia	Hay Tools.
Marion Dump Wagon Co., Marion, O	Marion Dump Wagons.
Manson-Campbell Co., Detroit, Mich.	Fanning Mills and Corn Graders.
McGlinchay, Edward, Galloway, O	Machinery.
Moore Bros., Lightning Rod Co	Lightning Rod Demonstration.
Mills Co., F. W., Columbus, O	Manufactures.
Miller Keyless Lock Co., J. B	Locks and Machinery.
Newark Machine Co., Newark, O	Manure Spreaders.
New Process Fertilizer Co., Columbus, O	Fertilizer.
Oliver Chilled Plow Works Indianapolis, Ind	Plows.
Ohio Cultivator Co., Bellevue, O	Cultivators, Plows.
Ohio Rake Co., Dayton, O	Corn Planters, Harrows, Hay Loaders, etc.
Ohio Motor Co., Sandusky, O	Stationary Gasoline Engines.
Osborne and Sexton Machinery Co., Columbus, O	Machinery.
Ohio Concrete Machinery Co., Columbus, O	Block Machines.
Parke, Davis and Co., Detroit, Mich	Kreso Dip, Disinfectants.
Parsons Band Cutter and Feeder Co., Newton, Iowa	Self Feeder, Band Cutter, Shredder, etc
Phillips Cement Stone Co., W. H., Columbus, O	Cement Stone, Two Piece System.
Patterson Co., W. A., Flint, Mich	Spring, Market and Delivery Wagons.
Pella Stacker Co., Pella, Iowa	Garden City Band Cutter, Self Feeder.
Port Huron Engine and Thresher Co., Port Huron, Mich	Engines, Threshers, Hay Presses, etc.
Ross Co., E. W., Springfield, O	Manure Spreaders, Ensilage Cutters.
Rosenthal Corn Husker Co., Milwaukee, Wis	Rosenthal Corn Husker in Operation.
Ross Supply Co., Greenville, O	Wind Mills, House Tanks, etc.
Riggle & Chenoweth, Columbus, O	Delivery Wagons, Farm Wagons.
Reeves & Co., Sidney, O	Reeves Engines, Gang Plow, etc.
Robinson & Co., Columbus, O	Engines, Wind Stackers, etc.
Russell & Co., Massillon, O	Engines, Stackers, Self Feeders, etc.
Ross Carriage Mfg. Co., Union City, Ind	Carriages, etc.
Rock Island Plow Co., Indianapolis, Ind	Plows.
Rude Bros. Mfg. Co., Liberty, Ind	Machinery.
Rumley Co., M., Toledo, O	Engines, Separators, Hullers.
Safety Shredder Co., Newcastle, Ind	Shredders, Gasoline Engines, Dynamos.
Scheidler Machine Works Co., Newark, O	Scheidler Traction Engine.
Star Mfg. Co., New Lexington, O	Feed Mills
Smith Mfg. Co., Chicago, Ill	Gasoline Engines, Cream Separators, etc.
Syracuse Chilled Plow Co., Columbus, O	Plows, Harrows, Potato Diggers, etc.
Smith Agricultural Chemical Co., Columbus, O	Fertilizer.
Star Storm Front Co., Troy O	Storm Fronts.
St. Clair Mfg. Co., Dayton, O	Machinery.
Serage Vacuum Cleaning Co., Columbus, O	Vacuum Cleaner.

St. Mary Machine Co., St. Marys, O.	Machinery.
Spartan Mfg. Co., Galesburg, Ill.	Feed Grinding Mills.
Toledo Stove and Range Co., Toledo, O.	Heating Stoves and Ranges.
Turnbull Wagon Co., Defiance, O.	Wagons.
Twentieth Century Tile Roofing Co., Rochester, Mich.	Tile Roofing.
Wayne Works, Richmond, Ind.	Drills, Corn Planters, Wagons.
Williams Contractors Supply Co., Columbus, O.	Street Sweeper, Stone Crusher, etc.
Whiteside Wheel Co., Indianapolis, Ind.	Wheels.
Whitman Agricultural Co., Indianapolis, Ind.	Baling Presses.
Zimmerman Mfg. Co., Auburn, Ind.	Wind Mills.

MERCHANTS' AND MANUFACTURERS' PRODUCTS.

T. E. Cromley, Member in Charge.

Aluminum Cooking Utensils Co., Pittsburg, Pa.	Aluminum Ware.
Acme Washing Machine Co., The, Columbus, O.	The Acme Washing Machine.
Baumer Buggy Co., St. Louis, Mo.	Buggies, Carriages, Phaetons, etc.
Buckeye Saw Co., The, Columbus, O.	Cross Cut and Hand Saws.
Columbus Buggy Co., Columbus, O.	Buggies, Phaetons and Surreys.
Columbus Carriage and Harness Co., Columbus, O.	Buggies, Phaetons, Surreys and Harness.
Cussins and Fearn Co., Columbus, O.	General Hardware, etc.
Carlisle and Son, W. S., Columbus, O.	Kitchen Cabinets, Stoves, etc.
Capital Asphalt and Mastic Co., Columbus, O.	Asphalt Material.
Columbus Heating and Ventilating Co., The, Columbus, O.	Furnaces, Sanitary Appliances for Churches and Schools.
Colonial Carriage Co., The, Circleville, O.	Buggies, Surreys, etc.
Columbia Carriage Co., Hamilton, O.	Surreys, Buggies and Phaetons.
Daugherty Mfg. Co., The W. R., Columbus, O.	Hoods and Storm Fronts for Buggies, etc.
Eckhart Carriage Co., Auburn, Ind.	Buggies, Phaetons, Surreys.
Findlay Carriage Co., The, Findlay, O.	Buggies, Phaetons, Surreys, etc.
Frohock Furniture Co., The, Columbus, O.	Kitchen Outfitting, Stoves, Ranges, etc.
Franklin Stove Co., Columbus, O.	Stoves, etc.
Gaumer & Sons, E. B., Urbana, O.	Pony Outfits, Carts, etc.
Gerstenslager Bros., The, Marshallville, O.	Buggies, Phaetons, Surreys, etc.
Howard Galion Buggy Co., Galion, O.	Buggies, Phaetons and Surreys.
Holcker Bros., Crestline, O.	Runabouts, Surreys, Buggies, etc.
Heskett & Co., W. E., Columbus, O.	Stoves, Heaters, etc.
Haswell Furnace Co., The, Circleville, O.	Pat. Process of Furnace Heating.
Illinois Aluminum Co., Columbus, O.	Aluminum Ware for Household Purposes.
Kiblinger Co., W. H., Auburn, Ind.	Buggies, Surreys, Phaetons, etc.
Knoderer, L. F., Columbus, O.	Sanitary Plumbing, etc.
Lammuck & Co., W. E., Columbus, O.	Hot Air Blast Furnaces.
McFarlan Carriage Co., The, Connersville, Ind.	Buggies, Phaetons, Surreys, etc.
Monypenny-Hammond Co., The, Columbus, O.	Coffees, etc.
Noyes Carriage Co., The, Elkhart, Ind.	Buggies, Surreys and Phaetons.
Newman, James, Columbus, O.	Pat. Weather and Door Strip, etc.
National Vehicle Co., The, Mansfield, O.	Buggies, Surreys and Phaetons.
Ohio Carriage Mfg. Co., Cincinnati, O.	Runabouts, Buggies, Surreys, etc..
Ohio Magazine Pub. Co., Columbus, O.	Publishers The Carriage Journal.
Ohlen Saw Co., Jas., The, Columbus, O.	Saws of Every Description.
One Minute Washer Co., Sandusky, O.	Patent Washing Machine.
Peters Buggy Co., The, Columbus, O.	Buggies, Surreys, Phaetons and Runabouts.
Poste Bros. Buggy Co., Columbus, O.	Buggies, Phaetons and Surreys.
Peerless Steel Range Co., Columbus, O.	Steel Ranges, Cooking and Heating Stoves.
Patterson Co., W. A., Flint, Mich.	Buggies, Surreys and Phaetons.
Quad Stove Co., Columbus, O.	Coal and Gas Ranges and Heaters.
Rowe Slayer Co., The, Columbus, O.	Kitchen Cabinets, Stoves, etc.
Round Oak Stove Co., Dowagiac, Mich.	Stoves, Ranges and Furnaces.
Reeves Bros., The, Columbus, O.	Gas and Electric Motors.

Sells, J. H. & F. A., Columbus, O	Harness, Saddles, Robes, etc.
Seidel Buggy Co., The, Richmond, Ind	Buggies, Storm Fronts, etc.
Slobaugh, H. C., Columbus, O	Harness, Robes, Blankets, Whips, etc
Scioto Buggy Co., Columbus, O	Buggies, Phaetons and Surreys.
Stewart Bros. & Co., Columbus, O	Stoves, Ranges, Heaters, etc.
Seeley and Beery, Columbus, O	Stoves, Ranges, Heaters, Washing Machines, etc.
Tri-State Vehicle Association	Publicity Bureau.
U. S. Carriage Co., Columbus, O	Hearses, Funeral Cars, Coupes, etc.
Valentine Hoof Ointment, The	Hoof Ointment.
Vehicle Apron and Hood Co., Columbus, O	Storm Fronts, Aprons, etc.
Warren & Southwick, Columbus, O	Delivery Wagons, etc.
Warren Paint Co., The, Columbus, O	Paints, Varnishes, etc.
Watson & Co., H. F., Erie, Pa	Roofing of Every Description.
Walborn & Riker Co., Saint Paris, O	Pony Outfits of All Grades.
Yardley, A. L., Columbus, O	Door, Window and Office Screens.
Zimmerman Mfg. Co., The, Auburn, Ind	Buggies, Surreys and Phaetons.

MERCHANDISE, MUSIC, ETC.

T. E. Cromley, Member in Charge.

Apple, M. S., Columbus, O	Glass Engraving.
Arnold, W. H., Charleston, W. Va	Jewelry, etc.
Bond, C. A., & Co., Columbus, O	Clothing, Gents' Furnishings etc.
Beggs Co., The D. C., Columbus, O	Burnt Wood Work.
Beach, J. S., Ocean City, N. J.	Shells.
Carlisle & Son, Columbus, O	Furniture, Carpets, Curtains, etc.
Commercial Paste Co., Columbus, O	Desk Paste, etc.
Darby, Dr. F. H.. Columbus, O	Display, Children's Home Society.
Egg Baking Powder Co., New York, N. Y	Baking Powder.
Goldsmith, J. I., Columbus, O	Handkerchief Embroidering.
Hesket, W. E., Columbus, O	Furniture, Carpets, etc.
Home Store, The, Columbus, O	Dress Goods, etc.
Hocking Valley Rug Co., The, Logan, O	Rugs.
Ladies' Aid Society, Columbus, O	Merchandise.
Lutz and Schram, Pittsburg, Pa	Canned Goods.
National Cash Register Co., Dayton, O	Cash Registers.
Puntenny & Entsler, Columbus, O	Pianos.
Right Shoe Co., The, Columbus, O	Shoes.
Reynolds, C. I., Columbus, O	Spectacles.
Stewart Brothers, Columbus, O	Furniture, Carpets, etc.
Westlake, M. W., Columbus, O	Glass Engraving.
West Hardware Co., Columbus, O	Display of Locks.

Official Report of the

SECRETARY

OF THE

Ohio State Board of Agriculture

ON

COMMERCIAL FEED STUFFS

Licensed to be Sold

During the Year 1907

BOARD OF LIVE STOCK COMMISSIONERS.
PAUL FISCHER,
STATE VETERINARIAN.

T. L. CALVERT
SECRETARY

STATE BOARD OF AGRICULTURE ORGANIZED 1846

J. W. FLEMING
ASS'T SEC'Y

DIVISION OF NURSERY AND ORCHARD INSPECTION.
N. E. SHAW,
CHIEF INSPECTOR.

STATE OF OHIO
DEPARTMENT OF AGRICULTURE
Division of Commercial Feed Stuffs

COLUMBUS, OHIO, December 31, 1907.

To the Manufacturers and Users of Commercial Feed Stuffs:

In compliance with the law governing the sale of commercial feed stuffs in Ohio, presented herewith is the report for the year 1907, embracing the claims of ingredients by the manufacturers and a correct report of the analyses of the various brands by the official chemist, Professor H. A. Weber, Ohio State University, Columbus.

The commercial feed stuffs law was enacted as a safeguard to the purchaser, as annually thousands of dollars are expended by the citizens of the state for these feeding products, and to protect these purchasers from fraud it was deemed wise to place their sale, in a way, under state supervision. The law has now been in force four years and during that time the number of brands legally licensed annually and offered for sale on the markets of the state has increased from sixty-four in the first year of its enactment to one hundred and forty during the year just closed. This is proof conclusive of the growing importance of this question, and, that all interested may derive the benefits of the law, I advise that each prospective purchaser read carefully the claims of the manufacturer as to the ingredients contained in his product and compare these claims with the official chemist's analysis of same before purchasing. By so doing he will obviate all chance for fraud.

FORM OF ISSUING REPORT.

The form of issuing the report is the same as in former years, but as some question has arisen as to the proper interpretation of the figures contained therein will say that the figures opposite the name of the brand of feed stuff represent the percentage of certain ingredients claimed to be contained in the product by the manufacturer, while the figures opposite the word "Found" represent the percentage of these ingredients as found therein by a careful analysis by the official chemist to the undersigned. To further facilitate comparison and aid the purchaser in making a judicious selection of commercial feed stuffs, we incorporate in this report, in addition to the pages containing the claims of manufacturers and the findings of the official chemist, a table giving the average composition of some of the leading feed stuffs.

RESULTS OF ANALYSES.

As stated above, one hundred and forty brands were legally licensed during the year 1907, and of this number one hundred and twenty-six brands were found on the open markets by the duly authorized deputy inspectors, and correct analyses of same, together with the claims of manufacturers, will be found on the pages following. In addition to these we also print the claims of the manufacturers for the fourteen brands which were legally licensed, but not found on the markets by the deputy inspectors.

Commenting upon the official analyses of the one hundred and twenty-six brands above mentioned, it now becomes my duty to report that nineteen of same have fallen below the standard required by law, and are amenable to the penalties provided in Section 6 of the Commercial Feed Stuffs law. Following is a complete list of these brands, together with names of manufacturers and record numbers:

Record Number.	Name of Brand.	Name and Address of Manufacturer.
13	Corn Protegran	The Dewey Bros. Co., Blanchester, Ohio.
14	Biles' Fourex (XXXX) Grains	The J. W. Biles Co., Cincinnati, Ohio.
15	Rye Protegran—Ideal Dairy Feed	The Dewey Bros. Co., Blanchester, Ohio.
27	Gluten Feed	Piel Bros. Starch Co., Indianapolis, Ind.
30	Chop Feed	The Commercial Milling Co., Cleveland, Ohio.
33	Cremo Brand	The Tennessee Fibre Co., Memphis, Tenn.
40	Climax Corn Distillers' Grains	The Deutsch & Sickert Co., Milwaukee, Wis.
48	Laying Food	The Cyphers Incubator Co., Buffalo, N. Y.
51	Forcing Food	The Cyphers Incubator Co., Buffalo, N. Y.
62	Molasses Grains	E. P. Mueller, Milwaukee, Wis.
79	Choice Cotton Seed Meal	The American Cotton Oil Co., New York, N.Y.
83	Ground Linseed Cake	Burton Cain, Agent, Outville, Ohio.
89	Purina Mash	Ralston Purina Co., St. Louis, Mo.
100	Alfalfa Stock Food	The Otto Weiss Alfalfa Stock Food Co. Wichita, Kan.
105	Daisy Dairy Feed	The Great Western Cereal Co., Chicago, Ill.
109	Gregson's Calf Meal	The Great Western Cereal Co., Chicago, Ill.
111	Union Gluten Feed	The Union Starch & Refining Co., Edinburg, Ind.
115	Dewey's Distillers' Dried Grains	The Dewey Bros. Co., Blanchester, Ohio.
125	Prize Dairy Feed	Milwaukee Molasses Feed Co., Milwaukee, Wis.

CONCLUSION.

I especially call the attention of manufacturers and dealers in commercial feed stuffs to the fact that all licenses for the current year expire with this date, hence the necessity of securing new licenses before offering feed stuffs for sale in 1908. Dealers should ascertain definitely whether or not the goods they are handling are properly licensed, as under the provisions of the law they become responsible individually for each brand sold or offered for sale, in case the manufacturer neglects to license his goods.

The law to regulate the sale of commercial feed stuffs in Ohio will be found on the last two pages of this report.

T. L. CALVERT, *Secretary.*

AVERAGE COMPOSITION OF FEEDING STUFFS.

	Protein.	Fat.	Fiber.
Hay, etc.	Per cent.	Per cent.	Per cent.
Timothy hay (in full bloom)	6.0	3.0	29.6
Red clover hay (in full bloom)	12.4	4.5	21.9
Alfalfa hay	14.3	2.2	25.0
Cowpea hay	16.6	2.2	20.1
Wheat straw	3.4	1.3	38.1
Rye straw	3.0	1.2	38.9
Oat straw	4.0	2.3	37.0
Corn stover (field cured)	3.8	1.1	19.7
Grain.			
Corn (Dent)	10.3	5.0	2.2
Oats	11.8	5.0	9.5
Rye	10.6	1.7	1.7
Wheat (winter)	11.8	2.1	1.8
By-Products.			
Wheat bran (winter)	16.0	4.0	8.1
Wheat middlings	15.6	4.0	4.6
Cotton seed meal	42.3	13.1	5.6
Linseed meal (old process)	32.9	7.9	8.9
Linseed meal (new process)	33.2	3.0	9.5
Malt sprouts	23.2	1.7	10.7
Dried beet pulp	7.9	0.6	17.4
Waste Products.			
Corn cob	1.5	0.3	24.0
Oat hulls	3.4	1.3	30.7
Rice hulls	2.9	1.2	33.5

TABULATED ANALYSES OF COMMERCIAL FEED STUFFS FOR THE YEAR ENDING DECEMBER, 31, 1907.

All analyses are made by Prof. H. A. Weber, Ohio State University, Columbus, Official Chemist.

Record Number.	Name of Feed Stuffs and Address of Manufacturer.	Claimed and Found.	Crude Protein. Per Cent.	Crude Fat. Per Cent.	Crude Fiber. Per Cent.	Record Number.
1	**SUPERIOR HORSE FEED.**	Claimed.	12.00	5.00	10.00	1
	Wadsworth Bros., Warren, Ohio	Found.	11.81	3.85	6.89	
2	**SUPERIOR DAIRY FEED.**	Claimed.	17.00	4.00	10.00	2
	Wadsworth Bros., Warren, Ohio	Found.	15.75	3.29	7.54	
3	**CHICK FOOD.**	Claimed.	10.54	3.40	....	3
	Cyphers Incubator Co., Buffalo, N. Y	Found.	10.50	2.85	3.25	
4	**BUFFALO GLUTEN FEED.**	Claimed.	24.00	2.50	7.00	4
	Corn Products Mfg. Co., Chicago, Ill.	Found.	25.37	4.10	7.68	
5	**WARNER'S DIAMOND GLUTEN FEED.**	Claimed.	23.00	2.50	6.00	5
	Corn Products Mfg. Co., Chicago, Ill	Found.	26.25	2.93	7.34	
6	**PURINA MILL FEED, CHICK**	Claimed.	11.00	3.60	4.00	6
	Ralston Purina Co., St. Louis, Mo	Found.	10.94	3.30	4.00	
7	**GREEN DIAMOND HOMINY FEED.**	Claimed.	10.00	7.00	5.00	7
	Chapin & Co., St. Louis, Mo	Found.	10.94	9.38	5.10	
8	**"PEARL" HOMINY FEED.**	Claimed.	9.63	8.39	6.89	8
	E. I. Bailey, Cleveland, Ohio.	Found.	11.37	8.17	3.80	

TABULATED ANALYSES OF COMMERCIAL FEED STUFFS—Continued.

Record Number.	Name of Feed Stuffs and Address of Manufacturer.	Claimed and Found.	Crude Protein. Per Cent.	Crude Fat. Per Cent.	Crude Fiber. Per Cent.	Record Number.
9	**STAR FEED.**	Claimed.	7.00	6.50	....	9
	The Toledo Elevator Co., Toledo, O.	Found.	7.88	5.69	9.67	
10	**OLD PROCESS OIL MEAL.**	Claimed.	32.36	5.00	....	10
	American Linseed Co., Toledo, Ohio	Found.	35.00	7.05	6.87	
11	**GOOD LUCK MILL FEED CHICK.**	Claimed.	9.00	3.00	6.00	11
	Good Luck Mills Co., St. Louis, Mo	Found.	10.50	4.02	4.90	
12	**UNION GRAINS, BILES' READY RATION.**	Claimed.	24.00	7.00	7.00	12
	The J. W. Biles Co., Cincinnati, Ohio	Found.	24.50	7.34	11.14	
13	**CORN PROTEGRAN.**	Claimed.	33.00	14.00	12.00	13
	The Dewey Bros. Co., Blanchester, Ohio.	Found.	28.44	13.31	10.40	
14	**BILES' FOUREX (XXXX) GRAINS.**	Claimed.	33.00	11.00	13.00	14
	The J. W. Biles Co., Cincinnati, Ohio.	Found.	30.18	12.35	14.53	
15	**RYE PROTEGRAN—IDEAL DAIRY FEED.**	Claimed.	21.00	6.00	18.00	15
	The Dewey Bros. Co., Blanchester, Ohio.	Found.	18.81	5.02	10.69	
16	**SUCRENE DAIRY FEED.**	Claimed.	16.50	3.50	12.00	16
	American Milling Co., Philadelphia, Pa.	Found.	18.81	4.32	15.05	
17	**SUCRENE HORSE FEED.**	Claimed.	10.00	3.00	13.50	17
	American Milling Co., Philadelphia, Pa.	Found.	14.00	4.66	12.09	

18	**BLATCHFORD'S CALF MEAL.**	Claimed.	25.00	5.00	4.75	18
	J. W. Barwell, Waukegan, Ill.	Found.	28.44	4.90	7.60	
19	**MEAT MEAL.**	Claimed.	50.00	10.00	....	19
	The Armour Fertilizer Works, Chicago, Ill.	Found.	60.80	19.05	....	
20	**BOSS CHOP FEED.**	Claimed.	8.00	3.50	....	20
	The Great Western Cereal Co., Chicago, Ill.	Found.	8.31	4.41	10.12	
21	**OIL MEAL.**	Claimed.	32.00	5.50	....	21
	Thompson & Co., Allegheny, Pa.	Found.	35.44	7.73	8.07	
22	**OIL MEAL.**	Claimed.	30.00	5.00	8.00	22
	The Metzgar Seed & Oil Co., Toledo, Ohio	Found.	31.50	8.43	10.14	
23	**M. D. CHOP.**	Claimed.	7.50	4.00	....	23
	The Toledo Grain & Milling Co., Toledo, Ohio	Found.	10.06	4.15	5.96	
24	**C. O. AND B. CHOP.**	Claimed.	7.50	3.50	....	24
	The Toledo Grain & Milling Co., Toledo, Ohio.	Found.	11.37	3.42	6.21	
25	**HOMINY FEED.**	Claimed.	10.00	8.00	3.75	25
	Pfeffer Milling Co., Lebanon, Ill.	Found.	11.81	8.76	2.98	
26	**NO. 2 CHOP.**	Claimed.	7.88	2.70	5.10	26
	Aetna Milling & Produce Co., Steubenville, Ohio	Found.	9.63	4.54	6.11	
27	**P. BROS. GLUTEN FEED.**	Claimed.	27.60	2.60	....	27
	Piel Bros. Starch Co., Indianapolis, Ind.	Found.	19.25	3.15	6.70	
28	**DRIED BEET PULP.**	Claimed.	8.00	0.50	17.00	28
	The Larrowe Milling Co., New York, N. Y.	Found.	8.75	0.80	21.60	
29	**STERLING HEN FEED.**	Claimed.	11.67	3.42	4.41	29
	Northrup, King & Co., Minneapolis, Minn.	Found.	13.13	3.58	3.35	
30	**CHOP FEED.**	Claimed.	10.81	6.02	....	30
	The Commercial Milling Co., Cleveland, Ohio.	Found.	7.88	3.65	12.20	

TABULATED ANALYSES OF COMMERCIAL FEED STUFFS—Continued.

Record Number.	Name of Feed Stuffs and Address of Manufacturer.	Claimed and Found.	Crude Protein.	Crude Fat.	Crude Fiber.	Record Number.
			Per Cent.	Per Cent.	Per Cent.	
31	**STERLING CHICK FEED.**	Claimed.	12.25	2.70	4.51	31
	Northrup, King & Co., Minneapolis, Minn	Found.	13.13	8.10	3.70	
32	**S. W. C. LINSEED OIL MEAL.**	Claimed.	33.00	6.00	8.00	32
	The Sherwin-Williams Co., Cleveland, Ohio.	Found.	35.00	9.14	7.95	
33	**CREAMO BRAND.**	Claimed.	22.00	5.00	28.00	33
	Tennessee Fibre Co., Memphis, Tenn.	Found.	17.50	4.44	27.35	
34	**POULTRY BONE.**	Claimed.	25.00	0.50	....	34
	The Armour Fertilizer Works, Chicago, Ill.	Found.	25.37	2.63	....	
35	**AJAX FLAKES.**	Claimed.	30.00	10.00	14.00	35
	Ajax Milling and Feed Co., New York, N. Y	Found.	34.12	14.50	13.00	
36	**BEEF SCRAPS.**	Claimed.	55.00	12.00	....	36
	The Armour Fertilizer Works, Chicago, Ill.	Found.	66.93	14.65	....	
37	**CEDAR RAPIDS GLUTEN FEED.**	Claimed.	24.00	4.00	7.00	37
	Douglas & Co., Cedar Rapids, Iowa.	Found.	22.75	8.15	8.30	
38	**GREEN DIAMOND COTTON SEED MEAL.**	Claimed.	41.00	9.00	5.00	38
	Chapin & Co., St. Louis, Mo	Found.	40.24	8.74	10.15	
39	**CONTINENTAL GLUTEN FEED.**	Claimed.	33.00	14.00	....	39
	Continental Cereal Co., Peoria, Ill.	Found.	32.37	13.80	10.50	

40	**CLIMAX CORN DISTILLERS' GRAINS.**	Claimed.	34.00	11.00	....	40
	Deutsch & Sickert Co., Milwaukee, Wis.	Found.	31.94	11.95	12.30	
41	**BLOOD MEAL.**	Claimed.	85.00	0.20	....	41
	The Armour Fertilizer Works, Chicago, Ill.	Found.	85.75	0.38	....	
42	**ROYAL CORN AND OAT CHOP FEED.**	Claimed.	8.31	5.10	5.81	42
	The Beck Cereal Co., Detroit, Mich	Found.	9.19	5.32	5.53	
43	**JERSEY MIXED FEED.**	Claimed.	12.05	3.20	16.05	43
	Indiana Milling Co., Terre Haute, Ind.	Found.	13.56	3.78	12.50	
44	**HOMINY FEED.**	Claimed.	11.02	7.70	....	44
	Suffern, Hunt & Co., Decatur, Ill.	Found.	10.06	8.83	4.99	
45	**ACME COW FEED.**	Claimed.	9.19	5.15	....	45
	Nickel Plate Elevator & Coal Co., Cleveland, Ohio.	Found.	9.63	3.30	9.00	
46	**ACME CHOP FEED.**	Claimed.	9.19	3.70	....	46
	Nickel Plate Elevator & Coal Co., Cleveland, Ohio.	Found.	9.19	3.40	11.91	
47	**PRIME COTTON SEED MEAL.**	Claimed.	41.00	9.00	7.00	47
	The Hunter Bros. Milling Co., St. Louis, Mo	Found.	42.00	10.51	8.95	
48	**LAYING FOOD.**	Claimed.	17.31	3.80	....	48
	Cyphers Incubator Co., Buffalo, N. Y.	Found.	13.56	2.30	3.28	
49	**HAMMOND DAIRY FEED.**	Claimed.	17.00	3.00	....	49
	Western Grain Products Co., Milwaukee, Wis.	Found.	17.50	5.32	10.57	
50	**HOMINY FEED**	Claimed.	10.70	7.80	2.20	50
	Perin Bros., Cincinnati, Ohio.	Found.	10.94	7.90	2.92	
51	**FORCING FOOD.**	Claimed.	12.89	3.80	....	51
	Cyphers Incubator Co., Buffalo, N. Y	Found.	9.63	2.11	1.99	
52	**SUCRENE POULTRY FEED.**	Claimed.	17.50	5.50	12.00	52
	American Milling Co., Philadelphia, Pa.	Found.	18.38	7.05	11.29	

TABULATED ANALYSES OF COMMERCIAL FEED STUFFS—Continued.

Record Number.	Name of Feed Stuffs and Address of Manufacturer.	Claimed and Found.	Crude Protein. Per Cent.	Crude Fat. Per Cent.	Crude Fiber. Per Cent.	Record Number.
53	**SCHUMACHER STOCK FEED.**	Claimed.	11.00	4.00	10.00	53
	The Quaker Oats Co., Chicago, Ill.	Found.	11.37	3.33	10.10	
54	**VICTOR FEED.**	Claimed.	7.50	3.00	12.00	54
	The Quaker Oats Co., Chicago, Ill.	Found.	7.44	2.92	14.32	
55	**AMERICAN POULTRY FOOD.**	Claimed.	12.00	3.50	9.00	55
	The Quaker Oats Co., Chicago, Ill.	Found.	12.69	5.14	4.05	
56	**QUAKER DAIRY FEED.**	Claimed.	12.00	3.00	17.00	56
	The Quaker Oats Co., Chicago, Ill.	Found.	15.31	4.11	15.10	
57	**CORN, OATS AND BARLEY FEED.**	Claimed.	11.00	4.00	10.00	57
	The Quaker Oats Co., Chicago, Ill.	Found.	10.50	3.23	9.62	
58	**BUCKEYE MIXED FEED.**	Claimed.	13.00	4.00	8.00	58
	The Quaker Oats Co., Chicago, Ill.	Found.	17.50	4.58	8.32	
59	**HOMINY FEED.**	Claimed.	9.50	7.00	5.00	59
	The Hunter Bros. Milling Co., St. Louis, Mo.	Found.	10.94	8.70	3.63	
60	**KEYSTONE CHOP.**	Claimed.	8.50	3.40	....	60
	The Toledo Grain & Milling Co., Toledo, Ohio	Found.	8.75	3.37	5.04	
61	**NO. I YELLOW CHOP.**	Claimed.	7.50	3.50	....	61
	The Toledo Grain & Milling Co., Toledo, Ohio.	Found.	10.06	3.76	6.46	

62	**MUELLER'S MOLASSES GRAINS.**	Claimed.	19.81	2.73	12.39	62
	E. P. Mueller, Milwaukee, Wis	Found.	16.62	2.45	9.32	
63	**GROUND LINSEED CAKE.**	Claimed.	32.00	6.00	....	63
	Archer-Daniels Linseed Co., Minneapolis, Minn.	Found.	33.25	7.47	8.61	
64	**CORN OATS AND BARLEY CHOP.**	Claimed.	8.90	3.70	10.60	64
	The Imperial Grain & Milling Co., Toledo, Ohio.	Found.	8.75	2.86	14.34	
65	**OWL BRAND COTTON SEED MEAL.**	Claimed.	38.50	7.00	10.00	65
	F. W. Brode & Co., Memphis, Tenn.	Found.	39.80	12.86	7.97	
66	**REGAL STOCK FEED.**	Claimed.	8.10	3.70	11.80	66
	The Imperial Grain & Milling Co., Toledo, Ohio	Found.	7.88	3.57	12.76	
67	**OLD PROCESS GROUND LINSEED CAKE.**	Claimed.	32.00	5.50	8.00	67
	Midland Linseed Co., Minneapolis, Minn.	Found.	33.69	7.75	9.05	
68	**BLATCHFORD'S SUGAR AND FLAXSEED.**	Claimed.	27.00	10.00	5.75	68
	J. W. Barwell, Waukegan, Ill	Found.	28.88	10.40	8.30	
69	**NO. 2 CHOP.**	Claimed.	....	....	....	69
	J. W. Cox, Kensington, Ohio.	Found.	7.44	2.49	15.57	
70	**VICTORIA CHOP.**	Claimed.	8.11	3.05	....	70
	The Royce & Coon Grain Co., Bowling Green, Ohio.	Found.	7.44	2.66	16.81	
71	**OLD PROCESS OIL MEAL.**	Claimed.	30.00	8.00	7.00	71
	Mayflower Mills, Fort Wayne, Ind.	Found.	30.62	10.48	9.60	
72	**MALT SPROUTS.**	Claimed.	26.83	3.00	12.87	72
	The Piqua Malt Co., Piqua, Ohio.	Found.	28.00	1.70	10.25	
73	**MALT SPROUTS.**	Claimed.	....	....	....	73
	The Edward Sohngen Malt Co., Hamilton, Ohio.	Found.	22.75	2.13	15.65	
74	**OLD PROCESS GROUND OIL CAKE.**	Claimed.	30.00	6.00	....	74
	Red Wing Linseed Mills, Red Wing, Minn	Found.	32.37	8.57	8.90	

TABULATED ANALYSES OF COMMERCIAL FFED STUFFS—Continued.

Record Number.	Name of Feed Stuffs and Address of Manufacturer.	Claimed and Found.	Crude Protein. Per Cent.	Crude Fat. Per Cent.	Crude Fiber. Per Cent.	Record Number.
75	**NORTH STAR CHOICE MALT SPROUTS.**	Claimed.	25.00	1.50	16.00	75
	North Star Malting Co., Minneapolis, Minn.	Found.	29.31	2.00	6.80	
76	**MALT SPROUTS.**	Claimed.	....	....	....	76
	American Malting Co., Hamilton, Ohio	Found.	28.00	1.89	10.50	
77	**HOLSTEIN SUGAR FEED.**	Claimed.	15.00	3.00	....	77
	F. W. Goeke & Co., St. Louis, Mo	Found.	16.18	3.65	12.05	
78	**MALT SPROUTS.**	Claimed.	....	....	....	78
	The John Wagner Sons Brewing Co., Sidney, Ohio.	Found.	28.00	1.70	12.20	
79	**CHOICE COTTON SEED MEAL.**	Claimed.	41.00	9.00	....	79
	The American Cotton Oil Co., New York, N. Y.	Found.	38.94	9.68	9.65	
80	**ROYAL OAT FEED.**	Claimed.	6.00	2.50	22.00	80
	The Great Western Cereal Co., Chicago, Ill.	Found.	5.25	2.00	29.40	
81	**GROUND FLAX FLAKES.**	Claimed.	14.72	15.02	24.16(1)	81
	Chas. R. Lull, Milwaukee, Wis	Found.	17.06	16.59	16.40	
82	**PERFECTION SCRATCH FOOD.**	Claimed.	....	....	....	82
	Ackerman Bros. Co., Mansfield, Ohio.	Found.	13.13	3.55	4.50	
83	**GROUND LINSEED CAKE.**	Claimed.	32.00	3.00	8.00(2)	83
	Burton Cain, Agent, Outville, Ohio	Found.	28.00	8.55	9.60	

84	**REGAL MIXTURE MILL FEED.**	Claimed.	9.00	3.00	6.00	84
	Robinson-Danforth Com. Co., St. Louis, Mo.	Found.	10.06	3.08	3.40	
85	**SCRATCHING FOOD.**	Claimed.	11.05	3.00	....	85
	Cyphers Incubator Co., Buffalo, N. Y.	Found.	11.37	3.42	3.05	
86	**RED HEN CHICK STARTER.**	Claimed.	13.00	2.50	4.50	86
	Saginaw Milling Co., Saginaw, Mich.	Found.	13.13	3.01	4.10	
87	**HOMINY FEED.**	Claimed.	10.25	7.75	3.08	87
	The Sam W. Weidler Co., Cincinnati, Ohio.	Found.	10.94	8.72	4.80	
88	**CHAMBERLAIN'S PERFECT CHICK FEED.**	Claimed.	12.00	3.00	8.00	88
	W. F. Chamberlain, St. Louis, Mo	Found.	10.50	3.12	4.05	
89	**PURINA MASH.**	Claimed.	17.00	5.00	11.50	89
	Ralston Purina Co., St. Louis, Mo	Found.	18.81	2.65	11.20	
90	**DRIED BREWERS' GRAINS.**	Claimed.	24.50	7.50	12.00	90
	Ralston Purina Co., St. Louis, Mo	Found.	23.62	5.89	14.45	
91	**TIGER GLUTEN FEED.**	Claimed.	23.00	2.50	7.00	91
	Corn Products Mfg. Co., Chicago, Ill	Found.	24.50	4.18	8.60	
92	**CORN FEED MEAL.**	Claimed.	8.50	3.00	4.00	92
	The Quaker Oats Co., Chicago, Ill	Found.	10.06	6.61	4.00	
93	**DRIED BREWERS' GRAINS.**	Claimed.	25.08	5.80	12.42	93
	The Cleveland & Sandusky Brewing Co., Sandusky, Ohio	Found.	24.50	6.18	14.20	
94	**HOMINY FEED.**	Claimed.	9.99	9.25	2.21	94
	The Standard Cereal Co., Chillicothe, Ohio	Found.	8.75	9.05	2.25	
95	**MALT SPROUTS.**	Claimed.	23.00	2.50	....	95
	Callahan & Neff, Canfield, Ohio	Found.	26.25	1.35	14.35	
96	**"SUN" CHICK STARTER.**	Claimed.	10.50	3.00	4.00	96
	The Albert Dickinson Co., Chicago, Ill.	Found.	9.63	3.00	3.55	

TABULATED ANALYSES OF COMMERCIAL FEED STUFFS—Continued.

Record Number.	Name of Feed Stuffs and Address of Manufacturer.	Claimed and Found.	Crude Protein. Per Cent.	Crude Fat. Per Cent.	Crude Fiber. Per Cent.	Record Number.
97	**"CRESCENT" CHICK FEED.**	Claimed.	10.50	3.00	4.00	97
	The Albert Dickinson Co., Chicago, Ill.	Found.	9.63	3.35	2.20	
98	**"GLOBE" SCRATCH FEED.**	Claimed.	10.50	3.00	4.00	98
	The Albert Dickinson Co., Chicago, Ill.	Found.	11.37	4.20	5.95	
99	**"QUEEN" POULTRY MASH.**	Claimed.	10.50	3.00	4.00	99
	The Albert Dickinson Co., Chicago, Ill.	Found.	10.50	3.22	5.50	
100	**OTTO WEISS ALFALFA STOCK FOOD.**	Claimed.	14.00	4.77	17.00	100
	The Otto Weiss Alfalfa Stock Food Co., Wichita, Kan.	Found.	10.94	3.91	7.85	
101	**MALT SPROUTS.**	Claimed.	25.02	2.44	12.40	101
	The Cleveland & Sandusky Brewing Co., Sandusky Ohio.	Found.	26.25	1.36	12.26	
102	**"PINE TREE" SCRATCH FEED.**	Claimed.	10.50	3.00	4.00	102
	The Albert Dickinson Co., Chicago, Ill.	Found.	10.50	2.79	4.82	
103	**CHOP FEED.**	Claimed.	....	....	....	103
	The Seeds Grain and Hay Co., Columbus, Ohio	Found.	10.50	3.03	3.25	
104	**D. G.**	Claimed.	19.00	6.00	18.00	104
	The Cleveland Grains-Drying Co., Cleveland, Ohio.	Found.	23.18	6.23	10.90	
105	**DAISY DAIRY FEED.**	Claimed.	16.00	3.00	9.00	105
	The Great Western Cereal Co., Chicago, Ill.	Found.	13.13	3.70	8.85	

106	**"KING" PIGEON FEED.** The Albert Dickinson Co., Chicago, Ill.	Claimed. Found.	10.50 12.69	3.00 2.93	4.00 6.55	106
107	**SCHUMACHER CALF MEAL.** The Quaker Oats Co., Chicago, Ill.	Claimed. Found.	19.00 20.12	8.00 8.35	3.00 3.35	107
108	**PURE GROUND OIL CAKE.** H. L. Pope, Agt., Dayton, Ohio	Claimed. Found.	 33.25	 8.35	 8.36	108
109	**GREGSON'S CALF MEAL.** The Great Western Cereal Co., Chicago, Ill.	Claimed. Found.	25.00 20.56	5.00 5.86	5.00 4.61	109
110	**ROYAL BRAND OF POULTRY FOOD.** W. J. Byrnes & Co., Chicago, Ill.	Claimed. Found.	10.50 11.81	3.00 2.90	4.00 4.16	110
111	**UNION GLUTEN FEED.** Union Starch and Refining Co., Edinburgh, Ind.	Claimed. Found.	24.00 19.69	3.00 5.77	6.30 6.61	111
112	**PREMIUM CALF MEAL.** The Quaker Oats Co., Chicago, Ill.	Claimed. Found.	14.50 15.31	4.50 5.35	3.00 2.90	112
113	**CHOP NO. 2.** Louisville Milling and Elevator Co., Louisville, O.	Claimed. Found.	 10.50	 3.61	 6.55	113
114	**STERLING STOCK FEED.** The Great Western Cereal Co., Chicago, Ill.	Claimed. Found.	11.00 11.37	4.00 3.44	9.00 9.40	114
115	**DEWEY'S DISTILLERS' DRIED GRAINS.** The Dewey's Bros. Co., Blanchester, Ohio.	Claimed. Found.	30.00 24.06	8.00 7.77	8.00 12.20	115
116	**HOMINY FEED.** American Hominy Co., Indianapolis, Ind.	Claimed. Found.	8.34 11.81	7.75 8.90	4.25 5.00	116
117	**HOMINY FEED.** The Semler Milling Co., Hamilton, Ohio.	Claimed. Found.	10.94 10.94	7.45 5.89	2.60 4.30	117
118	**STERLING SCRATCH FEED.** The Great Western Cereal Co., Chicago, Ill.	Claimed. Found.	12.00 11.81	3.00 4.85	8.00 5.40	118

TABULATED ANALYSES OF COMMERCIAL FEED STUFFS—Concluded.

Record Number.	Name of Feed Stuffs and Address of Manufacturer.	Claimed and Found.	Crude Protein. Per Cent.	Crude Fat. Per Cent.	Crude Fiber. Per Cent.	Record Number.
119	**DELAWARE SCRATCH FEED.** Zack Davis Co., Delaware, Ohio	Claimed. Found.	.... 11.37	.... 3.60	.... 3.40	119
120	**SCIOTO HOMINY FEED.** Portsmouth Cereal Co., Portsmouth, Ohio	Claimed. Found.	10.00 9.63	6.00 6.40	.... 8.20	120
121	**PHŒNIX BRAND POULTRY FEED.** The Illinois Seed Co., Chicago, Ill.	Claimed. Found.	10.50 12.25	3.00 4.24	.... 5.90	121
122	**MONITOR BRAND CHICK FEED.** The Illinois Seed Co., Chicago, Ill.	Claimed. Found.	10.50 12.25	3.00 2.40	.... 7.05	122
123	**CHOP FEED.** Braun & Kipp, Cincinnati, Ohio	Claimed. Found.	.... 10.94	.... 4.15	.... 10.05	123
124	**COLUMBIAN CHOP FEED.** Endslow Mill Co., Columbus, Ohio	Claimed. Found.	.... 10.94	.... 5.58	.... 5.80	124
125	**PRIZE DAIRY FEED.** Milwaukee Molasses Feed Co., Milwaukee, Wis	Claimed. Found.	18.00 13.56	3.00 2.10	13.00 14.45	125
126	**CHOP FEED.** B. F. Hartzler, West Liberty, Ohio	Claimed. Found.	.... 11.37	.... 4.29	.... 6.50	126

LIST OF COMMERCIAL FEED STUFFS PROPERLY LICENSED

And offered for sale in Ohio in 1907, but samples of which were not found by the Secretary or Deputies on the markets, hence they have not been analyzed.

MANUFACTURERS' CLAIMS.

Address of Manufacturer and Name of Feed Stuffs.	Crude Protein. Per Cent.	Crude Fat. Per Cent.	Crude Fiber. Per Cent.
American Hominy Co., Indianapolis, Ind. **HOMCO FEED**	9.52	9.42	3.28
The Armour Fertilizer Works, Chicago, Ill. **FEEDING TANKAGE**	40.00	10.00	....
The J. W. Biles Co., Cincinnati, Ohio. **MIDLAND BREWERS' GRAINS**	23.00	6.50	13.00
The Buckeye Cotton Oil Co., Cincinnati, Ohio. **COTTON SEED MEAL.**	38.42	7.85	12.16
The Corno Mills Co., East St. Louis, Ill. **CORNO HORSE AND MULE FEED**	10.00	3.50	12.00
Cyphers Incubator Co., Buffalo, N. Y. **DEVELOPING FOOD**	10.90	3.00	....
The Dewey Bros. Co., Blanchester, Ohio **DEWEY'S PROTEIN GRAINS**	32.00	13.00	12.00
J. & S. Emison & Co., Vincennes, Ind. **HOMINY FEED**	11.67	9.27	....
The F. L. Emmert Co., Cincinnati, Ohio. **DRIED BREWERS' GRAIN**	31.78	8.25	13.10
The Great Western Cereal Co., Chicago, Ill. **EXCELSIOR CHOP FEED**	8.00	3.50	....
Hirst & Begley Linseed Co., Chicago, Ill. **OIL MEAL**	32.00	8.00	11.00
Merchants' Distilling Co., Terre Haute, Ind. **MERCHANTS' HIGH-GRADE DAIRY FEED.**	30.00	10.00	14.00
The Quaker Oats Company, Chicago, Ill. **VIM FEED**	5.50	2.00	27.00
The Toledo Elevator Co., Toledo, Ohio. **REGULAR HOMINY FEED**	8.00	7.00	....

LAW TO REGULATE THE SALE OF COMMERCIAL FEED STUFFS IN OHIO.

SECTION 1. Every manufacturer of commercial feed stuffs, and every person, firm or company that shall sell, offer for sale or expose for sale the same in this state, shall furnish with each car or other amount shipped in bulk, and shall affix to every package of such commercial feed stuffs, in a conspicuous place on the outside thereof, a plainly printed statement clearly and truly certifying the number of net pounds in the shipment, or in each package containing such commercial feed stuffs, the name or trade mark under which it is sold, the name of the manufacturer or shipper, the place of manufacture or the place of business of the shipper and a chemical analysis stating the percentages it contains of crude protein (allowing one percentum of nitrogen to equal six and one-fourth percentum of protein), crude fat and crude fiber.

SECTION 2. Before any commercial feed stuffs shall be sold or offered for sale in Ohio, the manufacturer, shipper, company, firm or person who causes it to be sold or offered for sale, within the state, shall file with the secretary of the Ohio state board of agricuture a certified copy of the certificate referred to in section 1 of this bill, and shall deposit with said secretary a sealed glass jar or bottle containing not less than one pound of the said stuffs, sold or offered for sale, accompanied by an affidavit that it is a fair average sample.

SECTION 3. The manufacturer, importer or agent of any commercial feed stuffs, shall pay annually, on or before the first day of March, a license fee of $25.00 on each brand, for the privilege of selling or offering for sale within the state, said fee to be paid to the secretary of the Ohio state board of agriculture, provided: that whenever the manufacturer or importer shall have paid the license fee herein required, any person, company or firm selling, or offering for sale, any commercial feed stuffs, or acting as agent for such manufacturer or importer, shall not be required to pay the fee named in this section. On receipt of proper application for license, with license fee, the secretary of the Ohio state board of agriculture shall issue license for the current year; all licenses shall expire with the calendar year, December 31st.

SECTION 4. The term "commercial feed stuffs" as used in this act shall include linseed meal, cotton seed meal, pea meal, cocoanut meal, rice meal, gluten meal, gluten feed, dried brewers' grain, malt sprouts, hominy feeds, cerealine feeds, oats feeds, mixed feeds and all material of similar nature; but shall not include hay, straw, whole seeds, the mixed meals made directly from the entire grains of wheat, rye, barley, oats, Indian corn, buckwheat and broom corn, wheat bran or middlings, not mixed with other substances, but sold separately as distinct articles of commerce, and pure grains mixed and ground together.

SECTION 5. All analyses of commercial feed stuffs, sold within the state shall be made by, or under the direction of, the secretary of the Ohio state board of agriculture, and paid for out of the funds arising from license fees provided for in section 3 of this act. At least one analysis of each brand of commercial feed stuffs shall be made annually, if samples can be found in possession of agents, dealers, or consumers.

SECTION 6. Any manufacturer, company, firm, agent or dealer, who shall sell or offer for sale, or expose for sale, any commercial feed stuffs in this state, without complying with the requirements of this act, or shall sell or offer or expose for sale any commercial feed stuffs which contain a smaller percentage of constituents than it is certified to contain, shall upon conviction be fined not more than one hundred dollars for the first offense, and not more than two hundred dollars, for each subsequent offense, and the offender in all cases, shall also be liable for damages sustained by the purchaser of such commercial feed stuffs; provided, however, that a deficiency of two percentum of crude protein or two percentum of crude fat, or an excess of two percentum of crude fiber, claimed to be contained shall not be considered as evidence of fraudulent intent.

SECTION 7. Any person who shall adulterate any kind of meal, ground grain, bran or middlings with any other substance whatever, for the purpose of sale shall plainly mark or brand each and every package with a correct statement as to the proportions and kind of adulterant or adulterants used therein. The penalty for violating this section shall be a fine of not less than ten dollars or more than two hundred dollars for the first offense, and not less than twenty-five dollars or more than five hundred dollars for each subsequent offense.

SECTION 8. The secretary of the Ohio state board of agriculture, or any person deputized by him, is hereby authorized to draw from any package or bulk quantity of commercial feed stuffs exposed for sale, or found in possession of any purchaser, in any county of Ohio, a quantity not exceeding two pounds which shall be for analysis, as provided in section 5 of this act.

SECTION 9. All suits for the recovery of fines, under the provisions of this act, shall be brought by the secretary of the Ohio state board of agriculture, in the name of the state of Ohio. All prosecutions under this act shall be governed by section 3718*a* of the Revised Statutes of Ohio and said section shall control all such prosecutions.

SECTION 10. The secretary of the Ohio state board of agriculture shall publish, annually, a correct report of all analyses made and all licenses issued for the sale of commercial feed stuffs, together with a statement of all moneys received on account of license fees and all expenditures made in connection with securing samples, and having the same analyzed; and any surplus shall be placed to the credit of the agricultural fund.

The above is a correct copy of the law regulating the sale of Commercial Feed Stuffs in Ohio, now in force.

T. L. CALVERT, *Secretary.*

REPORT

OF THE

PROCEEDINGS

OF THE

State Farmers' Institute

HELD IN THE

BOARD OF TRADE AUDITORIUM,

COLUMBUS,

Tuesday and Wednesday, January 14 and 15, 1908

PROCEEDINGS,

Annual Meeting, Ohio State Farmers' Institute,

Columbus, Ohio, January 14-15, 1908.

The annual meeting of the State Farmers' Institute was held in the Board of Trade Auditorium, Columbus, Ohio, on Tuesday and Wednesday, January 14th and 15th, 1908, under the presidency of Mr. W. G. Farnsworth, Waterville, Ohio.

Mr. T. L. Calvert, secretary of the Ohio State Board of Agriculture, being detained by urgent business, requested Hon. H. M. Brown, of Hillsboro, Ohio, to call the Institute to order which he did in a short and appropriate address.

After referring to the fact that Secretary Calvert had requested him to act as his proxy, Mr. Brown continued as follows:

This is really the first time I have ever been present at the formal opening of the Ohio State Farmers' Institute. I am delighted to see so many in attendance, as it usually happens, no matter how important a meeting is or what is its subsequent success, that at the opening session it is very sparsely attended. The quality of this attendance here today would imply that we are going to have a very successful meeting.

At one time of my life I was a practioner of medicine, and I have had a great deal of experience with medical men, as well as with men in other walks of life, assembled in conventions in different parts of the United States. I have always been clannish, proud of the organizations that I associated with and the people that I associated with. I have always felt a great deal of personal pride in being one of them. I have attended meetings of medical associations in all the cities of the Union, as well as other meetings of medical men, and I have always involuntarily and unconsciously compared the men with whom I was associated with other bodies of men, and have always felt rather proud of the company in which I was. But I want to say to you in all frankness and all truth, and without the least desire to exaggerate or misrepresent, that my intimate association for the last twelve or fifteen years with farmers and stockmen has been more satisfactory to me than any other associations that I have ever had the honor to affiliate with.

In the first place, the farmer and the stockman has a tender heart; he has a brotherly feeling towards his fellows. Then, while they may not be technically better educated than any other body of men, they are more broadly educated. All other bodies are specialists; the farmer is generally a man who has obtained his education from observation, which makes him a man of companionable character, makes him a man in whom you can at all times feel that you have something solid upon which to rely. His affections are sincere; his reciprocation is sincere; you feel at home with him. Now that is my experience, all of which has made me feel that I have a special affinity with an organization of this character; and the relationship which I now sustain, so far as the satisfaction of myself is concerned, I appreciate more than that sustained by me toward any other association with which I have been connected.

I hope that we are going to have a delightful meeting which you will all enjoy. I know that we all come here without any feelings of jealousy or envy, and that we are all endeavoring to make things as pleasant as we possibly can.

With these few remarks I desire to introduce your distinguished president, Mr. W. G. Farnsworth, who will declare this meeting open and ready for business.

PRESIDENT'S ADDRESS.

Ladies and Gentlemen:—I am sure we will profit by what the doctor has said. He has certainly had the opportunity of associating with various bodies of educated men, and when he candidly and frankly states that he appreciates the association that he has had with the stockmen and farmers throughout the State of Ohio as highly, or more highly, than his relationship toward any other body of men that he has associated with, I take it as a very sincere and valuable compliment to the farmers of the State of Ohio; and I also appreciate his words of welcome that he has expressed.

I believe we are going to have a good Institute at this time. While there is not the attendance that we oftentimes have, and usually have later in the session, as Institute workers we know that such is the general rule, that we do not have a full attendance at the first session; but we must acknowledge that those who are in attendance always at the first session are among the men who make the Institutes beneficial.

We have come here this morning to take an active part in the discussion of the questions that are to be presented to you, and I hope and trust that you will all feel it your duty to participate.

In glancing back a few years to the time of the organization of our State Institute, which I believe is some twenty years ago, we remember that the first Farmers' Institutes were held in Ohio under the auspices of the State Board of Agriculture in 1881, during which year there were but twenty-seven of these Institutes held in the State. How about the present time? I believe that three hundred and twenty such institutes were held in the State of Ohio last year, receiving aid from the Ohio Department of Agriculture. Undoubtedly many more will hold sessions this year and be qualified for State aid.

We find that not only have the number of Institutes increased, but the attendance upon them has also increased throughout the State.

We also find that there is a vast difference in the general feeling, or attitude, of the farming community at large in reference to these Institutes from what it was formerly in 1880 and 1881, when they were first organized. At one time many of the farmers who attended these Institutes looked upon them somewhat in the way of a school, possibly for book farming in a certain sense. I believe that was the attitude in the earlier days, and the speaker who attempted to deal with the more advanced principles of agriculture was not listened to with very great respect and attention; in fact, the speakers at that time were obliged to deal only in a very limited way with the scientific principles underlying agriculture. They were obliged to confine themselves largely to facts drawn from their own practical experience.

But how is it today? Now, in many of our Institutes, they are demanding advanced ideas. They not only want to know methods of practice, but they want to know the reasons upon which the practice is founded. They are asking the reason why. The older Institute lecturers, some of whom possibly are present today, have reason to be proud of what has been accomplished along these lines. They have aroused in the farming community such a feeling that at the present time a very large per cent. of the farming community are demanding advanced ideas, and are no longer satisfied with the primary principles of agriculture. They want to understand the reason why such a practice or operation produces the results that it does. This condition is certainly a good omen and proves beyond a doubt that the farming community that attend our Institutes are thinking out their own problems today, or in other words, they are working out their own salvation. I believe that the development of this condition is one of the highest aims we have in our Institute work today throughout the State.

The Institute workers of the past, by their efficient labors, have gradually instilled into the minds of the younger generation of farmers especially, a desire for higher education in agricultural science, such as has been afforded them by our Agricultural Colleges, our Experiment Stations and the Department of Agriculture. So that in the Institutes of the present day we meet with those who are not only producing according to modern methods of farming, but they know why they practice such and such methods. They have been studying their farms, their different soils and environment, and also different methods of cultivation, drainage and soil improvement, and understand why they are able to obtain desired results. These same men go home from their Institutes and colleges and demonstrate to their neighbors in actual practice that the principles advocated and presented at the Farmers' Institutes are not merely ideal theories, but are practical and profitable suggestions for the farmer to adopt and apply. All this is having its influence upon the farming community and its attitude toward the Institutes, and these influences are rapidly spreading throughout the entire community and developing a great knowledge of agricultural science.

Now if this influence of our Farmers' Institutes is to continue and go on to increased usefulness in the future as it has in the past, friends, we must create in the minds of those in attendance a desire for still greater knowledge as to how to minimize labor upon the farm and obtain satisfactory results. We must also break up that state of apathy which I am glad to say not often, but occasionally, exists among the farming community, and arouse them to greater efforts by injecting new ideas, and inspire thought along the line of their own work, and continuous study of the various problems that are continually arising in our farming operations. Just as the instructor must be in advance of his audience if he expects to obtain the results demanded of him today, so it is essential that in the future, as well as in the present, the Institutes must keep abreast of the times and be able to present in a clear and practical manner the essential principles of agricultural science. And to stimulate still further in the minds of our hearers still higher thought and purposes, especially on the part of the younger generation, we must fit and prepare ourselves for this work.

It is absolutely essential that we avail ourselves of every opportunity for advancement along this line, such as keeping in close touch with the work of our Experiment Stations, since the results obtained by these stations are coming to be more and more recognized by the farmers of Ohio as authoritative and worthy of adoption, and it has generally—I might say almost without exception—been very carefully worked out by thoughtful and conservative men who not only obtain certain results but verify them as well, and in many cases can give the reason why they obtain the results, and can present to their audience the bottom or basic principles of agricultural practice.

Now, while our Experiment Stations are in a position to work out many of the various problems that concern us upon our farms, yet they are handicapped to a certain extent in circulating this information generally to the farming community, their only means being that of the agricultural press and the official bulletins. Now I believe here is an opportunity for us, as Institute workers and as members of Farmers' Institutes throughout the State, I believe we can, as instructors, visit our Stations as often as possible and become familiar with the work that is there being carried on, so as to thoroughly understand the methods and results obtained. We can then very materially assist in carrying this information to many of the farming community who at the present time do not receive it. They may receive the bulletins, but many of them will not take the time or the trouble to read them carefully, and there are others who cannot understand them thoroughly when they do read them. If we can carry this information to them direct, and after having observed personally the work carried on, I am satisfied it will have a much greater effect upon them than it will through the press or the bulletins.

I also feel safe in saying this morning that our Experiment Stations will appreciate our efforts along this line, and will give us any assistance that is within their power; provided, however, that we are conservative and careful as to our statements in regard to results obtained by them. In this way we have an opportunity of doing a vast amount of good, but by carelessness in not being conservative, or in giving currency to exaggerated statements, there is always a chance of doing harm to your Station, and to the farmers in your community as well; but by carefully considering and presenting the subject, I believe we can do an immense amount of good.

Another point upon which I wish to touch is this: I believe that the average work of our Agricultural Colleges is one of the factors that has brought young farmers, as well as older ones, up to their present high standard. Opportunities afforded by the Agricultural Department in our State College are such that our young men are learning the principles of agriculture and are going home and putting them into practice. They are becoming inspired with new thoughts and new ideas. Like the little leaven that leaveneth the whole lump, they are spreading the good work in their various communities. I believe we should work along in harmony with our State Agricultural College and strive to stimulate still further the desire in our young people to attend these Institutes in order to acquire greater knowledge, and to attend the agricultural colleges.

We also appreciate the work of the Department of Agriculture; the work of our own Department and the privilege that they have afforded us of gathering together here once a year is very valuable. Thus we are better equipped to go before audiences and present the thoughts that we have in a clear and practical manner. It also assists us in getting down to the basic principles underlying all our farm work. We appreciate the kindness of our State Board along this line.

We should also know what our Department of Agriculture at Washington is doing, and keep in touch with the work that is published in the various bulletins of this department.

Now friends, in conclusion, let me say I believe it behooves each one of us, not only as Institute workers but as members of Institutes throughout the State, and farmers in general, to put forth our every effort and to make use of every opportunity offered, and of the various suggestions for our advancement, in order that we, as Institute workers, may teach better methods and advanced ideas, and maintain for the State of Ohio and the State Board of Agriculture the enviable reputation which they now enjoy for progressive and valuable Institutes that they have labored so faithfully and successfully to build up for the farmers of the State of Ohio.

I thank you. (Applause.)

Music: The Cecelian Ladies' Quartette.

President Farnsworth: I understand from Secretary Calvert that Dr. Paul Fischer, State Veterinarian, who was to have delivered us an address this morning, will be unable, on account of illness, to be present, and we have in his place as an able substitute, Dr. Lamb, his assistant. The Doctor is a very modest and mild man, as his name will indicate; but I am satisfied that he can give us something that will be worthy of your attention. We will next hear from Dr. Lamb.

REMARKS BY DR. LAMB, ASSISTANT STATE VETERINARIAN.

Ladies and Gentlemen:—I have to appear this morning in this capacity simply to make an excuse for the failure of the presentation of Dr. Fischer's address. We were not acquainted with the fact that Dr. Fischer would be unable to make his address until a very late hour last evening, which did not allow us time to arrange for some other address in his place this morning, either on the part of myself or someone else that we might secure. We did, however, speak to Dr. Schaffter, who did not altogether agree that he would favor us with some remarks. As to myself, I have been suffering more or less from an attack of la grippe, which is also the excuse for Dr. Fischer's absence. He has been confined to his home now for a week with an attack of la grippe.

Dr. Fischer intended in his address to give you some account of the work of the State Veterinarian and Live Stock Commission during the past year. I do not know the specific lines on which his address would have been made, but I presume that he would have given an outline of the work accomplished.

I might say that the work of the office of the State Veterinarian has progressed along the usual lines during the year. Our work is necessarily very restricted from the fact that we have limited funds and can employ but a limited number of employes or assistants to carry out the work, which makes many more demands upon us than we can take care of.

There are two or three lines of work that receive the first attention of the board. We have some specific laws and rules relating to the important and prevalent contagious and infectious diseases, such as glanders and sheep scab, and the control of the Southern cattle that come into the State for immediate slaughter, or for other purposes.

Work along these lines has been given attention in a more or less complete manner, and we have succeeded in taking care of this part of the work quite satisfactorily.

Another feature of the work to which we have tried to give prompt and careful attention is the calls that come to the Board notifying us of cases of supposed infectious diseases, such as anthrax, black leg and various other diseases of an acute infectious nature. These calls are given the best of our attention.

Aside from this part of the work there are several other branches of our work in which great demands are made on the Board that we are not able to take care of in any satisfactory manner at present. We have as an almost everywhere present disease in Ohio—swine plague. The present funds available and the number of employes make it impossible for us to do very much more than advisory work. Sometimes when a report is made to us and there is uncertainty about the diagnosis, we make an effort to visit the location in order to confirm the diagnosis; that is, when it cannot be confirmed by the local authorities, veterinarians and others; and then we furnish literature on the subject and proper advice. We have had a great deal of correspondence in reference to these diseases.

There has been a great and increasing demand for help from the Board with regard to tuberculosis of cattle. From the very first organization of the Board we have felt that the people needed help in this direction, but it has been absolutely impossible to undertake anything like complete or summary handling of this disease under the present laws and conditions. It was planned by the Board to offer help to those wishing it along this line, and a form of application has been prepared and is furnished to those desiring the help of the Board, who wish investigation made or a specific tuberculin test. This form of application was so worded that it called for the good will and earnest co-operation of the party requesting the help of the Board. The specific requirements are set forth in the application, which is supplied to anyone for the asking. Briefly, these requirements are that the owner, in case it is found that he has any tuberculosis in his herd, is to make a satisfactory disposition of the animals. This satisfactory disposition was first defined in the request as killing, burying or burning them. This was afterward modified so that where there were enough of such affected animals to make it profitable, they might be slaughtered under a satisfactory inspection. It was also concluded by the Board that these might be included under the provision of the law, that the Board may have animals slaughtered for the benefit of the public health, and their value be appraised and payment for same by the legislature recommended; this to apply to all reacting or affected animals. That modification was made, and this form of application or request has been continued in use.

Several years ago, when these applications were first furnished to stock owners, they figured out that they could not afford to adopt such a radical course. I think the principal reason was because they did not understand the conditions thoroughly. However, requests continued to come in occasionally and tests were made. These requests have increased in number, so that during the last year we have had a great many more of them than we could take care of. This is voluntary on the part of the stock owners. They are becoming, I think, more awakened to the situation all over the State, as I find by visiting the various sections. There is an aroused interest among all classes of citizens with regard to this matter of tuberculosis, and especially among the more advanced cattle owners, both farmers and those more specifically engaged in the handling of dairy cattle, such as dairymen. The most intelligent and advanced of these people are beginning to feel that they must do something. A great many do not know what they can do or ought to do, but they feel they must do something. A great many of them after they have had sufficient time to study and understand the matter feel that this is a good opportunity, this offer of help from the State Board of Live Stock Commissioners, so they procure requests, fill them out and file them. Then of course there ensues delay, because we cannot take care of all of these requests at once. So they get anxious and write us letters through prosecuting attorneys and other attorneys, wanting to know why we do not take care of our business. All we can do is to try and explain the situation to them and urge them to wait a little until the interest of the people of the State is sufficiently aroused and more funds are provided, or the equipment of the Board sufficiently increased so that it can comply more promptly with such requests.

I would like to say in conclusion that we have a report which covers all the work of the Board, which report is now in the hands of the printers, and will be ready for distribution before long. We would like everyone present to make note of this and to request copies of this report if they do not promptly receive it. A large number will be mailed according to different mailing lists that we have at hand; but I do not know but that there may be those here who do not receive these reports, and we would be very much pleased to have them request a copy of same, and also to circulate information about it in their community. In this way we may be able to do some extended work, and it will tend to inform the citizens of the State more generally as to what the work of the Board is. In my investigation work over the State I have found that there exists an alarming ignorance of the existence of the Board, its powers, and the work that it is seeking to accomplish. So we will be pleased to have you take an interest in securing a copy of the report and in your interesting others in your community to do the same.

In concluding these purely extemporaneous remarks, I will say that we wish to thank the people of the different counties and localities of the State for their good will and co-operation with the work of the Board. Wherever we have come in contact with them almost universally after they once understand the work and effort that is being made to assist them, we receive their best wishes and good will.

I thank you, ladies and gentlemen.

Discussion.

President Farnsworth: Is Dr. Schaffter in the audience? He is the government inspector, and we would like very much to hear from him if he is present. It appears that Dr. Schaffter is not here. Is there any one that will volunteer to discuss this matter along the lines that Dr. Lamb has brought out? If there is any one that would like to say a word on this question, we would like to have it discussed for a short time. There is time enough before the close of the forenoon session.

Mr. Roudebush: We think this is a very pertinent question, and I regret very much that Dr. Schaffter is not present, because I find that the farmers and stockmen of Ohio and other states are ignorant to the extreme as to the rules and regulations of the United States Department of Agriculture in regard to the shipment of sheep infested with scab mites, and cattle infested with the Texas fever; and with the rulings of the United States Department of Agriculture as to the transportation of hogs as well as cattle that have tuberculosis. I am not going to take your time on this, but am only calling your attention to it. I would suggest that institute lecturers, farmers and stockmen in particular, write to the United States Department of Agriculure and get the reports of the Bureau of Animal Industry of the Government, and the regulations along this line. Uncle Sam is spending a great deal of money and has a great army of about eight thousand inspectors that are doing a great work for us. I do not think that I would be radical in making the statement that beef would not be worth two and a half cents a pound were it not for this inspection, because we would only have a home market; and one of the great reasons why sheep and cattle are as profitable as they are today in Ohio and the United States in general, is because Argentina, our greatest competitor in animal husbandry, cannot land live animals in any of the ports of Continental Europe, because she has not a police control of these contagious diseases, such as Texas cattle fever, pleuro-pneumonia, anthrax, and others that I might name. The public in general is ignorant of the wonderful work along this line that is being done by the United States Department of Agriculture, and in a limited way by the Ohio State Board of Agriculture—only limited for want of funds.

President Farnsworth: A good suggestion. I would like to call your attention to the suggestion made by Dr. Lamb, to call for these reports that are being prepared, not only for yourselves, but for your neighboring farmers and stock raisers. I think that is a good way to educate them. This is a vital question which closely affects the stock raising interests of the state. We would like further discussion, either on this question or on others that you desire to bring up. Let us have a good, lively discussion which will evidence your interest and good will toward making the institute a success.

Dr. C. R. Wagner: I would like to ask Dr. Lamb what per cent. of the animals that he has treated have responded to this tuberculin test, especially around the cities of Cleveland, Sandusky and Toledo?

Dr. Lamb: I am glad the gentleman asked this question, because I believe there is a great misunderstanding about the number of animals that are affected with tuberculosis, or the distribution of such animals. I have been connected with this work for a number of years—six or seven years—and I have more and more come to the belief all the time that, given any situation of tuberculosis, with any reasonable chance to get a history, and you can trace it right back to where it came from. Communities are infected by tuberculosis in direct ratio to the exposure. We have communities in the state where it appears that there has been but very little exposure; we have other communities of the state where there has been a tremendous amount of exposure, and those communities are usually where they have the best cattle.

Dr. Wagner: What do you mean by "exposure"?

Dr. Lamb. I mean contact with an infected animal. Tuberculosis is a slow, insidious, chronic, infectious disease. It is absolutely impossible to determine the length of time necessary to contract it from an infected animal; and the same is equally true as applied to human beings. In tuberculosis of human beings, every one of us can recall cases in our own experience where two or more in a family have died, while other members of the family have lived right along with it and did not become affected. Others might die of old age, and an autopsy would prove that they had tuberculosis at some time in some form or another. In human medicine it has been found impossible to tell just how much exposure will affect a certain individual. Undoubtedly we are all more or less exposed every day, but there is a certain resistance in the individual organism against infection, and the disease is warded off, or at least if one becomes affected its ravages are held in abeyance so that it does not become physically manifest. We do not know the exact analogy of the progress of this disease in animals as compared to human beings. We are rather inclined to believe that not exactly the same biological disease-resisting laws apply to both classes alike. I believe that cattle are much more prone to contract tuberculosis on slight exposure. We have no exact data along this line; we cannot tell absolutely what degree or kind of exposure will result in an infection of the other cattle.

I have had some very interesting experiences along this line, and might, if I am not taking too much time, mention one or two. I recall an instance in Geneva, Ohio. A man there owns a small place, and in connection with his farm and other work runs a small dairy business. He has a large barn with a large basement room. In one end of this barn he has stalls for the horses, and in the other he arranged stalls for his cattle, and put in a cement floor He is a conscientious, careful and painstaking man who tries to take care of his cattle in the best way possible, to feed them well and in every way look after their wants. He had four cows and two heifers. He felt that he wanted to increase the capacity of his dairy slightly, and bought a fresh Jersey cow four or five years old, in good flesh and appearance, and eating and milking well. After buying this cow he put her in this stable. She had been housed in a smaller and closer stable. Shortly after getting this cow he noticed she was coughing. He reasoned with himself that the cow having been removed from a close stable to a large, airy basement, possibly she had taken some cold and would get over it shortly. He was a careful, observant man, and he watched the cow. She continued to cough. This made him suspicious of her, and he appealed to the Board to make a test of his cattle. He was under the impression that he could have this one cow tested. I was making a test in the immediate neighborhood, and he brought her over there to see if I could test her at the same time. I explained to him that the nature of the tests made by our Board required complete tests, etc. So he said he would be glad to have it made. As I was impressed with his sincereity, I managed to take extra time after I got through otherwise to go over and test his herd. From physical examination I was reasonably certain that this suspected cow had tuberculosis, but after I saw the other cattle and got the history of them, that they were purchased when they were calves, and there could not be any reasonable chance for infection from any other source, I would have felt almost certain that there was no tuberculosis in that herd if I had not been fooled in previous experiences of the same sort. So I said nothing, but proceeded to test the cattle. I was myself surprised when three of his cows reacted. They were appraised at market value to go to slaughter under inspection at Cleveland. The lesions found in those cows showed that there was incipient infection. The length of time that the purchased cow was in the stable was almost exactly two months; it was bought upon a certain day in February, and the test was made at about the same day of the month in April. There was no way of getting out of the conclusion that the other three cows were infected from this cow during that two months' time. The cows were in good condition of flesh, under good surroundings, well fed and well taken care of, and fairly good arrangements as to light and ventilation—not, of course, ideal, but far better than the average. I thought at the time that that was an interesting situation.

I have had similar experiences, in fact a number of them in the last year.

To get more specifically to the question asked by the gentleman, as to the per cent. of cattle responding to the test, in the localitites named: It is pretty hard to figure percentages without a great deal of data; they are not worth much when they are based on limited data, but, of course, they may be accepted for what they are worth. Now here is an interesting fact; the herds where we test on these requests are usually suspected. The test is made on the owner's suspicion or the suspicion of neighbors. They have no doubt of the truth of their suspicions themselves, but the other man across the road is not so certain about it. If he is a pretty good citizen, rather than have any distrubance, he is willing to have a test made to satisfy his neighbors; so sometimes that is one reason for the request. Again, sometimes the local veterinarian, so-called veterinarian, or even licensed veterinarian, becomes suspicious of the herd, and for these different reasons, or one or more of them, a request is made. Now the herd is suspected, and we make the test, collecting all the history we can at the time. We have examined thirty-two herds during the last year, the larger number of which were handled by either Dr. Fischer or myself. Some of this work was done under the supervision of the Board by a few other official veterinarians. For instance, the city veterinarian of Columbus tested Dr. Hartman's cattle.

Of the number of herds that were examined by myself, just one-half of the number showed any tuberculosis. The other half were absolutely free from the tuberculosis suspected, although some of them were in the worst sanitary conditions and made the worst physical appearance. It was through their physical appearance that they were suspected of having tuberculosis, but notwithstanding that, they were found to be absolutely free from it, the trouble being something else. The percentage of reactions in the reacting herds could be almost predicted before the test was made, if there was a history of the existence in a herd of tuberculosis for several years or so, and a number of animals had gone to pieces in the herd, some dying and some just able to get around. If such was the history of the herd, you would usually find at least ninety per cent. infected. I tested one of the finer herds of the state, and out of fifty-seven animals forty-five reacted. Tuberculosis had existed in that herd for a long time.

Dr. Wagner: I would like to ask Dr. Lamb what became of the forty-five that reacted?

Dr. Lamb: The greater number of them were slaughtered. The test was verified in each case. A few of those animals are to be used for experimenting and to get calves to be raised by hand, where the pedigree is good. Concerning the matter of exposure, if a man said to me, "Oh, I raised those cattle, or I bought them from Jones over here, who has never had any cows die, and who has not bought any cattle; he has just been raising his own cattle," or he might say, "I have raised them almost all myself, in fact I have only bought one or two cows in the last year or two," I would not expect to find much, if any, tuberculosis in the herd. I want to call your attention to the apparent inconsistency of this statement with the one I have just made as to the cases that show infection on slight exposure. In such cases where you get a good history like that of cows that have only been suspected for a short time, perhaps a month of two or a year or two, there is not much extension of it; that explains the statement that I made that we have not data enough to know how an affected animal becomes affected, or by what certain kind of exposure. Sometimes they take it readily, sometimes not so readily. As I said, now and then a herd affected by tuberculosis can almost be diagnosed after learning its history. If you get tuberculosis in a herd and it continues for a considerable length of time, you will have an extension of the infection just as sure as anything, and this extension may be greater, depending upon sanitary conditions. Undoubtedly, reasoning from general lines of scientific knowledge, the animal will not offer the same resistance under different stabling and living conditions. I believe that about answers the gentleman.

Mr. Buchanan: I would like to ask Dr. Lamb what opportunities our butchers have to determine whether there is tuberculosis in cattle? They are slaughtering cattle all over the country. Have they not the power of telling by an examination of the lungs and various organs of the animal? I have watched this for ten or twelve years in our neighborhood. I have watched cattle that I was suspicious of. When they were slaughtered I went and examined them very carefully, and I would not find a single indication of tuberculosis, and yet I have examined cattle that were slaughtered and found slight traces at the butcher's block. I shot five rabbits a year ago, and out of the five, two had tuberculosis. I have not eaten a rabbit since. What is the danger of consuming this flesh when you have found tuberculosis in the lungs or alimentary canal, or walls of the abdomen, or some other part of the body?

Dr. Lamb: Well, there might be a good deal of difference of opinion about the consumption of tubercular meat, that is, I mean shades of difference of opinion, but in general, tubercular meat is condemned when the infection reaches that part of the carcass that becomes a food product. The inspection of the Bureau of Animal Industry shows that certain animals exhibit incipient lesions of tuberculosis where the disease has not yet become general. It may be found in some of the glands, lymphatic glands of the head or lungs, or intestinal tract, under certain specific conditions that it would be rather difficult for me to go into in detail and explain, because it would involve statements that only those more or less familiar with the work would understand. But certain of the carcasses that are infected are passed under the United States meat inspection rules and regulations.

Now as to the ability of a butcher to detect tuberculosis, this again is altogether dependent upon the butcher, what his general training has been, and whether he has ever been instructed about looking for signs. What are called macroscopic, or naked eye, appearances of the lesions of tuberculosis, are very characteristic, and an intelligent person ought to be able to identify a great many of these, perhaps not all, but a great many. Certainly almost any child could tell tuberculosis in some of the worst infected carcasses, because the lungs will not resemble lung tissue at all; it will be so distorted that you would hardly know it was lung tissue. Sometimes the membranes that line the cavity of the pleura are so studded with new growths, grape-like appearing growths, that any one that ever had any intimation of it woud know it was tubercular. But in animals slightly infected, the ordinary butcher would never know it. A great many of them are not interested in looking for it, but the ones that are might not know it.

Now about the danger. I think that there is possibly less danger from the consumption of meat than the public is inclined to fear. The great danger is in products that are consumed in the raw state, such as milk. Meat in this country is almost universally cooked, and the cooking would destroy infection. However, I believe public opinion will soon be strong enough all over the country to enforce thorough meat inspection, so that all meat locally killed, or otherwise, will have to come under some fairly complete form of inspection. I think that that is the public sentiment, because people do not feel like taking chances when it means only a fraction of expense to have competent inspection. We do not feel like taking the chance of anything, especially a disease like tuberculosis. This is more true in the case of those who have had anything to do with cases of tuberculosis either in their own community or their own family.

President Farnsworth: Any further questions?

Mr. Eversole: I would like to ask the gentleman to tell us whether boiling milk is not a remedy against the danger of contracting tuberculosis. Is there not great danger of people contracting the disease by taking milk from tubercular cows? I would like to hear from him on the subject of a remedy. In some cases we do not know whether our cows have tuberculosis or not.

Dr. Lamb: Well, yes, tubercular infection can be destroyed by certain methods of sterilization or disinfection. If a man were careful to boil all milk used, he certainly would not contract the disease. There may be some difference of opinion about the exact degree of heat necessary. Pasteurization is supposed to destroy infection in milk, but in employing pasteurization we are not all experts and we may not secure the necessary degree of heat in all cases. Boiling would certainly be safe enough. Some people believe in indulging their sentiment, which they say is part of their existence, and they say they do not want to drink boiled tubercular milk, because they do not like the idea of drinking boiled up organisms. That may be carrying it too far. I think if we could find anything else in the way of prevention, it would be desirable. Certain methods have been adopted, more or less, over the country during the past years, and a great deal of attention has been given to the subject. Some of these methods would not be best to recommend to dairymen, unless carried out in a public, official way, but if used by farmers for their own protection, it might not be a good thing to recommend some methods, because infection might still exist through methods of handling, and in the transfer from one vessel to another the portion of raw milk left in one vessel might be allowed to come in contact with the portion supposed to have been sterilized. It doesn't need very much contaminated milk to produce infection in good milk, and the knowledge of the ordinary farmer about technical processes, such as pasteurization, might still leave a chance open for infection. So I do not think that this is a subject that demands the serious attention of the farmer or small cattle owner. I do not know whether I have answered the gentleman's question or not.

Dr. Fair, Cleveland: I would like to ask the gentleman if he believes that a farmer can afford to own a tubercular cow and not segregate her from the balance of the herd.

Dr. Lamb: Why, I have to say that it depends upon what the Doctor means, what qualification he puts upon the word "afford." Some men can afford a whole lot. Some of us can afford to get drunk every day; some of us can afford to smoke three or four ten-cent cigars a day and get along and not go into bankruptcy, and yet not leave much of an inheritance to the folks left behind, but we get along for the present. If the Doctor means whether it would be profitable, I should say most decidedly, no.

Dr. Fair: I had reference to the ethical point of view, as to whether he could afford to own and keep an animal of that kind and not segregate her from the other animals—from an ethical standpoint.

Dr. Lamb: You mean the impression made on the public?

Dr. Fair: No, sir, I mean on his own pocket book.

Dr. Lamb: I hardly grasp what the Doctor means. If he means the impression made on the public that buys the milk, or his product, I think that it would hardly be a desirable experiment to try, because people are getting interested and aroused about this matter of tuberculosis. I might say that among some classes of people they are getting desperate. In this city we have two herds, the owners of which guarantee that the milk supplied by them is not from infected cattle, and they cannot meet the demand for their milk. The greater part of their product is certified milk, and milk will not be certified unless it is from a tuberculin tested herd. Such milk is sold at ten cents a quart, and I know some people that believe it to be to their best interest to buy it and pay three or four cents more for it than for ordinary milk. I know working people that endeavor to get this milk and are willing to pay for it, not only because they believe there is larger nutrient value in it, but they value the assurance to their minds that the milk is not infected. This sentiment is increasing in such a way that it demands some attention; and I woud say here that I believe all intelligent dairymen realize this fact and are willing to co-operate with the effort to have something done. Now the plan is for them to get in and be represented in what is done.

Most people believe it is not good policy to attack this question in a radical way, because people are not educated to it. We could do it in a radical way if enough of the people wanted to do it that way; we could stop every bit of it tomorrow morning. We could smash every saloon in Ohio before breakfast tomorrow morning, if enough of the people believed in that course, because the people are supreme in this country; but we do not believe that enough of them have come to that point at present to attack some of these questions in a radical way.

Those people who have had one of the dearest members of their family suffer the lingering death of tuberculosis for a number of years, or who perhaps have lost a little babe that they dearly loved, would have paid ten times the price to have saved those precious lives, and some of those people are willing to be radical. I might say for the benefit of the dairymen that those people are not going to take excuses. The only reason that we cannot handle this proposition radically is because we have not the majority of the people, but I believe we will have them before long; but we do not believe that that is the best way.

All reforms have been promoted first by education of the people. I know from my personal contact with them, that the people throughout the state want something done. They do not know just what to do, but they know they do want something done. There is an intense interest in the matter. I might take occasion here to announce that there are some meetings in the city at present by dairy interests, that are trying to deal with these questions. Tonight, in this auditorium, at half past seven o'clock, there will be some of the best representative men in Ohio from dairy interests, from stock interests and from public health interests, from economic interests, and Boards of Trade, who will be here to give to the public fair and impartial statements with reference to this matter. The United States Bureau of Animal Industry will be represented by R. W. Hickman, whose talk will be well worth the time and attention of every one that is at all interested. He comes from the highest authority we have in the United States in our animal diseases—the Bureau of Animal Industry. They certainly will not ask the various states to propagate anything that is wrong. Every American knows that. I do not know whether it is strictly in order for me to mention this meeting at this time, but I feel that I ought to do it, because I know there are a great many here who are interested and who will be glad to come here tonight and listen to what is advanced in the way of cold facts or argument, or resolutions, etc. Perhaps this announcement has been made, or will be made by the chair. I believe that is all I have to say.

Dr. Fair: May I be permitted to say one word? I do not think the Doctor fully understood my question. I had in mind to have him answer the question as to whether a dairyman can afford, knowingly, to keep a tubercular cow mixed up with the balance of his healthy herds, or whether he should not segregate her in order to get the most money out of her? The point I have in mind is, that a great deal of money can be made out of tubercular animals perhaps, when you know they are tubercular, by allowing them to live in fresh air and good sunlight, and under perfect sanitary conditions, instead of housing them with their well animals in close, illy ventilated stables, with not sufficient air and air space. It is a well known fact, possibly, that consumption is not by any means hereditary always. It may be in some cases; but the disease is contracted from other sources. The point I want him to answer is, whether a dairyman can afford to keep a consumptive cow in company with the balance of his herd, knowing that the disease is highly infectious and contagious?

Dr. Lamb: I cannot answer the Doctor in one or two words. I am afraid we are taking too much time with this discussion, but I would reply, no, I do not think he can afford it, because, as I am trying to explain, it would infect the other cattle; but I do not believe that we can make any disposition of tubercular animals, except one that is strictly along the lines of good citizenship. We should desire to dispose of such animals in such a way that we will not injure anybody else, or take any chances of injuring anybody else. The great state of Ohio has been good enough to pay men for such cows. I know a good many people that have got more money for a tubercular cow than they could have sold it for. They may not be able to do that in the future, but they certainly will get enough, so that they can afford not to risk the infection of the rest of the herd. The cow stands a good chance, if in any kind of condition so that its flesh will pass inspection, of being sold for meat. You get a meat value and also reimbursement from the state. Who wants to hold such a cow in order to give her fresh air treatment, and take any chance of public condemnation or suspicion of his place, when he can get that much for it?

I have dealt with a good many people who had tubercular herds, who have never regretted the loss of the infected animals very much.

I might say right here on the question of the infallibility of the tuberculin test, which has been a question with some stockmen; well, that is now settled. The infallibility of the test is settled with all people that have intelligence on the subject. I do not mean to say that the farmer is not an intelligent man, but very often he is not intelligent on this subject. Perhaps I should not employ the word "infallible," for I never knew anything that was infallible; but the tuberculin test is a perfectly reliable one. In my personal experience I have not had much trouble with the tuberculin test. When I test a herd of cattle I have to take a great many other things into consideration with reference to the condition of the cattle. We have what we call the typical reaction, doubtful reaction, etc. You can generally eliminate those conditions that bother, if you have any experience, and get the matter down so that the possibility of error is very slight. One way in a doubtful case is to let the man isolate the animal for a while until we are certain. I find that they do not want to do that. They say, "Call it tubercular, take it away, I do not want to bother with it." The farmers in Ohio are in good enough condition that they can afford to lose a cow; they are not afraid of the sacrifice. There is too much sentimental talk about the hardship on people. Why, sometimes a man will squeal about getting ten dollars less for his worthless cow, and will go the next day and buy a new buggy when his old buggy would have done him a year or two more. It is not such a hardship. The trouble is in their minds. I do not mean that they are not intelligent, that they are not informed. They are informed, but they are not informed on this subject. This may be the fault of the authorities, those that have been expending the public money. Perhaps they have not exercised all the care they ought in order to get the people informed. It seems, though, that they try to do this.

I have very much appreciated the remarks with reference to the United States Department of Agriculture. They have been working and worrying to get the people interested, and to try and do something for the people of the country. They do not get the support that they ought to, I know that. They have tons of literature they they beg you to take, good literature which has cost hundreds of thousands of dollars to bring out, to do the work on which this literature is founded, and to defray the printing expense. They want you to avail yourselves of it. They try in every way they can to get it to you, and to get you interested. I believe there are some bills in congress that ought to be passed and will be passed. The extension of high school education will help. If it would cost every farmer ten dollars in hard cash right out of his pocket every year for the extension of this educational work, even if it did not do any more than to get the publications of the United States Department of Agriculture read, it would be well worth while. You can find plenty of intelligent farmers that will tell you the same thing. It is not only the speakers and instructors in colleges and public positions, but the intelligent farmer will give you the same argument. (Applause.)

Dr. Fair: Mr. Chairman and gentlemen, just one word in explanation of the meaning of the point I raise. I call to mind one instance that occurred about fifteen months ago. I was called upon to test a cow that cost the gentleman, a friend of mine, eight hundred dollars; and she reacted to the tuberculin test. I am quite certain that she suffered from tuberculosis, but she was in calf. I will not mention what cow it was or where she came from, but I suggested, as usual, when it was found that she reacted, that she be isolated from the balance of the herd. We built a nice shed for her away out in the open, and she and the other infected animals were kept there. She raised her calf, which was a heifer calf, and that heifer calf today is free from tuberculosis. The cow was killed after she had the calf. She had general tuberculosis, but the calf, to the best of my knowledge, is perfectly sound and it will probably be worth five hundred or a thousand dollars. That man broke even. I suggested, as I would with a cheaper animal; he left it entirely to me, was willing to spend his money to cure her. He said, "Do as you please, do as you think best; put yourself in my position; suppose you had a cow that cost you eight hundred dollars, what would you do?" Well, we took care of her. We knew she had tuberculosis and we killed her. We protected the balance of his herd, none of which has reacted. He has a lot of valuable cattle. There is a point where the dairyman and the farmer may break even. If the cow had not had a calf, he would have had nothing to show for it, but the calf promises to be one of the best in the United States. There is a case where it paid to segregate the infected animal from the balance of the herd, and by doing so money was saved.

Dr. Newton, Lucas County: I do not wish to take up any of your time further, but I would like to inquire of Dr. Fair if that calf nursed the mother?

Dr. Fair: No, sir, not once.

Dr. Newton: I was going to say if she did, she would be apt to have tuberculosis.

Dr. Lamb: Dr. Fair's plan is all right. Any feasible plan is all right. There is only one danger about it. Is it practical to control it as it should be? Is it practical in the administration of the live stock and sanitary laws to maintain a sufficient supervision of this kind of work to pay for itself? It might be arranged that we could afford to pay a higher price for a good animal. That would be a question open to debate. It might be that the people of Ohio would be willing to do it. The Doctor's remarks are all right. That has been done and is being done, and it is a desirable thing. It is also desirable that the man should not lose any more than he has to. That is part of his religious duty, unless he marries his daughter to an European.

Dr. Fair: Now as to the danger from the cow's milk, we fed the calf milk from cows that were free from tuberculosis. We also took pains to burn up all litter, bedding and excrement, for fear chickens or hogs might get into trouble, and we took every precaution. We kept the shed clean, but that cow was blanketed and kept in a cold place; there was no heat. She was where there was plenty of fresh air. We fed her well, and she was in apparently good looking condition when we killed her; nevertheless she had general tuberculosis.

President Farnsworth: The discussion has now proceeded until near the closing hour. We have certainly had a good discussion on this subject. As has been already suggested, this evening we have a joint meeting of the Boards of Health and Commerce Boards, for the purpose of discussing and promoting sanitary legislation. This meeting will be held in the Board of Trade auditorium at 7:30 oclock, p. m. You will notice on the back of your programmes a number of other meetings that are to be held, both today and tomorrow, at different points around the city. As there is no meeting in this hall under the auspices of the State Institute tonight, I hope you will attend here if you can. There will be present several prominent men, Dr. Fair and Dr. Newton, as well as Mr. Lamb, veterinarians; and I hope that Dr. Schaffter will also be present. Unless there is further discussion, I would like to inquire if Dr. Schaffter has come in since we began discussing this question. If so, we would like to hear from him.

Dr. Lamb: Dr. Schaffter is the government inspector in charge at Cleveland, one of the large stations of the Bureau of Animal Industry in this country. He is on the programme for tonight. When we found that Dr. Fischer would not be able to fill his number here, we at a very late hour asked Dr. Schaffter to give us some general remarks along the line of the work that is carried on by the Bureau of Animal Industry. There is a good deal of misconception as to the work the Bureau has done or is attempting to do. Some people think it covers a great deal more ground than it does. I suppose Dr. Schaffter was prevented from being here. He did not promise exactly, but just said he would try to be present. I do not wish you to feel that he has defaulted in any way. In order that you should not be disappointed, I tried to fill in the number as substitute for Dr. Schaffter, but do not take it in any way that the Doctor has defaulted. If he is not here now, he will be here tonight.

President Farnsworth: It is in order for a committee on Resolutions and on Nominations to be appointed at this time, to report tomorrow afternoon, and I will name as such committees the following gentlemen, viz:

COMMITTEE ON RESOLUTIONS.

George E. Scott, F. L. Allen, Horatio Markley.

COMMITTEE ON NOMINATIONS.

Lowell Roudebush, J. F. Brigham, Charles McIntire.

Are there any other committees to be appointed at this time?

Mr. Roudebush: I move we adjourn.

President Farnsworth: First permit me to make one announcement. This afternoon's session will begin at 2:00 o'clock, and will be in charge of the State Farmers' Institute lecturers and officers. Bro. George E. Scott, President of that Association, will take charge of the afternoon session. He requests me to state that he would like to meet all the executive committee, which committee he was authorized to select at our meeting this last fall, and all institute workers. He would like this committee to meet him at the Southern Hotel at 1:00 o'clock, p. m., immediately after dinner.

This executive committee appointed by him consists of some of the Institute officials as well as some of the members of our state board.

After music, by the Cecelian Ladies' Quartette, adjourned.

TUESDAY AFTERNOON SESSION

IN CHARGE OF STATE FARMERS' INSTITUTE LECTURERS AND OFFICERS.

Pursuant to announcement at the morning session, the afternoon session on Tuesday was devoted to the State Farmers' Institute lecturers and the presidents and secretaries of the local county institutes.

Mr. G. E. Scott, of Mt. Pleasant, Ohio, president of this organization, called the session to order at two o'clock, p. m. Mr. William Kline, of Gilboa, Ohio, secretary of this organization, was assisted by Mr. John Begg, of Columbus Grove, Ohio.

President Scott: Ladies and gentlemen, I have written out a few lines, which will be very brief indeed, as to the purpose of this meeting. I do not like to read papers, from the fact that I must put on nose glasses to read at all, and would prefer to talk straight from my feet, as I would in that way be able to express myself very much better. When it comes to reading I find that the paper is always between me and my listeners. However, here is what I have prepared:

ADDRESS BY PRESIDENT GEORGE E. SCOTT, MT. PLEASANT, OHIO.

It gives me pleasure to greet so many of you this afternoon in the real first annual session of the Ohio Farmers' Institute Association.

The fact that the Ohio Farmers' Institute has become a living factor in progressive agriculture makes it more than a passing event to the whole farming population of the State.

Agriculture having become each year more of a popular vocation, the farm home greater in its attractions and the soil bringing forth a marvelous increase in production has drawn attention from all classes toward country life.

For thirty years the State Board of Agriculture has devoted time, energy and money toward the building up of an industry system that has not only become the pride of the State, but attracted wide attention all over the Union.

Year by year the influence of these Institutes from very few in number have multiplied until the present season brings the number up to the surprising figures of three hundred and twenty-five held at State expense, and some thirty as independents, making a total of three hundred and fifty meetings.

To Dr. W. I. Chamberlain, the veteran secretary of the Ohio State Board of Agriculture, we owe a debt of gratitude that cannot be repaid except in memory of the achievements of the work so well begun and so well continued by others who followed so gracefully in his footsteps. Secretary Bonhan, his worthy successor, piloted the instituted work for years, going out into the field as did Dr. Chamberlain, engaging in active work on the platform. Later on our late W. W. Miller, who occupied the secretary's office during a period of twelve years through the activities of the State Boards elected for that time, made such wonderful improvement in the Institute work that he left it at his sudden death the greatest Institute system in the Union.

Today the present State Board of Agriculture, with Mr. T. L. Calvert as its secretary, are climaxing the history of the past with grander strides of success than the most sanguine could have hoped to have witnessed.

As possibly one of the oldest members of the Institute force, I am glad to chronicle the statement that the men employed during the past fourteen years within my personal acquaintance have been gentlemen of the highest type of manhood, education and moral stamina.

Had not wisdom and sound judgment been one of the chief characteristics of the State Board in selecting just such men, the Institutes of Ohio could never have been raised to the high standard as they are rated by the farmers in Ohio.

Yet, while with wide reaching effect, these Institutes have worked miracles over the State in agricultural lines, they have also entered the social and moral life of the home until we find as much personal grace in the lives of the rural homes as is often seen in the city or town.

Where more than a decade ago there was distress in our farms, there is thrift and neatness. Education has become the watchword of the hour, and our agricultural college is filled with boys eager to possess the knowledge that shall make them a power in the agricultural world.

Is it not possible that the Farmers' Institute, with its extending influences, has opened up the way that has influenced this wonderful change in the lives of our rural people? Truly they have been the forerunner that has blazed the way for the professional and scientific work that comes from our agricultural college and Experiment Stations. They have certainly been a godsend to the two hundred and seventy-six thousand farm homes of Ohio into which they are annually pouring a stream of moral and intellectual sunshine, and other coming years will find equally as grand work done over that of the past.

This meeting has been called at the suggestion of the Ohio State Board, asking the co-operation of the Institute force and the officers of the County Farmers' Institute for their assistance in the future; looking toward the improvement of the extended work in every county in the State, believing in union there is strength.

Gentlemen worthy of mention have been selected from each of the named factors to present the case from their standpoint to the members of this association.

The matter will be discussed at such length as time and interest will allow. Any of the seven hundred members are invited to participate in short, timely addresses.

In conclusion I want to say we are here as a great representative body affecting the interests of one of the greatest commonwealths of the Union.

Other States are looking on this movement with interest, and we of the foremost State in the work, do not want to take any backward strides, but with a steady, courageous front keep our banner of progress at the front of the procession.

President Scott: Ladies and gentlemen, I am now going to present to you a gentleman from Tippecanoe City, a resident of Miami County, who has long been interested as an officer in the Farmers' Institutes of his county. He is abundantly able to give you information upon the topic which he will treat, and he will represent the county officers of the state of Ohio in his talk to you this afternoon.

I have the pleasure of introducing to you Mr. W. H. Deam, of Tippecanoe City.

ADDRESS BY W. H. DEAM, TIPPECANOE CITY, OHIO.

Mr. President, Ladies and Gentlemen:—This is not my manuscript, because I never wrote one. I think possibly it is a missionary tract, or something of that kind that I have picked up somewhere. It seems to me that the question has been reversed. Something over twenty-five years ago—I do not remember the exact date, but less than a quarter of a century ago—I attended the first Institute in Miami County, which was addressed by our old friend Dr. Chamberlain. Since then I have ever been a student at every Institute within my reach, and never have I before been asked to give any information or instruction. I do not know that I shall be able to do it now. I do want to say, however, that I am especially interested in the American farmer's home, because upon it rests the future destiny of the world, if you please. The American farmers will direct the future destiny of the world.

Brother Calvert wrote me a letter a few weeks ago in which he said he wanted me to talk to the Farmers' Institute lecturers; if possible give a little encouragement and offer such suggestions as I might see fit. Now if I were to offer any suggestions that might appear to you as criticisms, I hope you will take them in the spirit they are intended. I believe that we never reach perfection in this life; we are not perfect in anything yet, and possibly we are not perfect as yet in our Institute work. I am told that there are about twenty-five Institute workers here this afternoon, and I know that they will agree with me that when we associate with the farmers in our Institute work throughout the State of Ohio we associate with the very best. I mean by that when you are invited to the homes of the most advanced farmers, you get into the very best homes in the State of Ohio, not excepting those of any city. You get into those homes where the people are all on dress parade; they were looking for you before you came there; they had been apprised of your coming. Now I fear that you are apt to reason from that standpoint and, if so, I fear that in your general Institute work you are shooting above the mark, you are paving the way for the fellow who has already paved the way for himself; you are paving the way for the advance guard.

Let me suggest another proposition. I am only going to talk ten minutes now, Mr. President. I have been taking the farmers by surprise for twenty years. The work in which I am engaged has taken me among the farmers at inopportune times. I have gone into all kinds of homes, from the very poorest to the very best. You may wonder what my occupation has been. It was that of adjuster of losses. So I was received in all kinds of homes; and instead of the American farmer's home or the Ohio farmer's home being what some of you have been led to believe it is, I fear you are mistaken. I fear there is a lower level that you never have found; I fear that you have not been convinced that fifty per cent. of the farmer's wives today are but galley slaves, if I must say it, and that in fifty per cent. of all the farmer's homes in Ohio today there are a lot of boys and girls who are starving to death for knowledge.

That is a pretty hard proposition, Mr. President.

A Voice: Lay it on if you think it is true. We will have to rebut it if it is not.

When I say this I mean to say that, in entering these homes, whether from the back door or the front door, my observation has taught me to recognize at once whether the influence going out from that home is a good one or a bad one. I think I am able to tell whether there is intelligence in the home or not.

I find that many homes today are not supplied with necessary literature to make the people intelligent. I find that many homes today are supplied with the weekly paper. Possibly this is a church paper and is devoid of general news. It may be the only periodical that comes into the home. Perhaps you do not believe that. You do not believe me when I tell you how great a percentage there is of farmers' homes in which that condition prevails. Nevertheless it is true.

You talk to them in the Institute about crops, about how to raise more corn, and you are often talking to the man who already grows a big crop. You tell them how to grow hogs and you are talking to a man who has made a success of the hog industry. You talk to them about the cattle business, and you start at the place where the successful cattleman has left off. You forget all about the fellow who has about one cow and perhaps a couple of hogs. You have forgotten all along that line in my judgment. Possibly this sounds harsh, but I cannot help it. I only take it from the way you talk to us when you come to us. I want to suggest to you that we would be glad if you would talk to us on a lower level. Let the men who have been so successful take care of themselves. Tell the fellow with only one or two cows how to improve his condition; tell the wife who is only a galley slave what the outlook is for her.

Now, somebody will suggest that we ought to have some lady speakers to go around and do that. No, I do not believe that would work; I would like to have the ladies come and talk to us at our Institutes, but I will tell you something: If a lady were to say anything disrespectful of the husbands there would be trouble with the wives, there would be a hair pulling; but I can say anything in the world about the husband and the wife will pat me on the back when she gets the chance. (Laughter and applause.) Now I want to suggest that while we would love to have the ladies, yet I should like to have the gentlemen who address us all over the State of Ohio to remember the conditions as they exist in the homes of the farmers of Ohio today. Remember that the farmer of today is the one you are talking about and talking to. The farmer of today buys every convenience in the world. He rides, as the boys say. He gets a plow, and upon it he rides. He gets a mower and a hay tedder, and of other implements he buys the very best; but you go into the average home today and you will find the domestic department of that home devoid of all improvements. You will find that the good wives are laboring today just as they did forty years ago, that no improvements have come into the farm home unless exceptionally now and then, just once in a great while you will find some conveniences. I am not putting it too strong. I will say that the larger percentage of the wives still milk the cows round behind the old straw shed just as they did when I was a boy. There are exceptions, but those conditions exist in a majority of cases.

I want the Institute force to get down to the little things of life that go to make home more pleasant and make the outlook for the good wife, who is the greatest factor in the successful home after all, bright and more hopeful. You go out and tell the men how to manage the farm, how to do this, that and the other, but you forget that the success of the farmer today depends very largely upon the queen in the home. (Applause.)

I just want to suggest one little thing which I thought of a short time ago. My home is not an ideal one by any means. I do not mean to say that, but some of you when you come to us tell us just how you do it in your home. We have to put up with it; we do not believe all of it. I want to suggest one proposition that is neglected in the farms of Ohio. In the average farm home we burn kerosene for lighting purposes. When there is very much to be done, I take it there must be about six lights. In the average dwelling about four lamps are used every evening. Not less than two lanterns must be carried to the barn night and morning, all of which must be cleaned every morning of the year; the globes must be washed, the wicks must be trimmed, and the reservoirs must be replenished with oil—a nasty, dirty job, if you please, for your good wife to do. It takes her about thirty minutes each day in the year, or about three and a half hours a week, which is fifteen hours a month. You can count now what that amounts to for the twelve months of the year, you can count it up and see what it is worth—worth considerable. And after it is all done you have not had any light in the home at all of a satisfactory character. You have been groping your way in the darkness. Let me suggest to you a better way for the man of medium means, who has not very much money. The man of small means wants to so use it as to make home cheerful and life worth living. Place in your home an artificial light and get rid of all this drudgery. You do not know how it brightens things up. I know how it brightens up home for me. I am speaking now more particularly of the acetylene light plant. I cannot think of any one thing that costs a little money that brings so large returns in brightening up the home as an acetylene light plant. If you can find any better kind of artificial light, by all means get it. I hear somebdy saying, "Gasoline," but acetylene is good not only for light but for cooking purposes. Such conveniences even the lower strata of homes can avail themselves of. A man does not have to be worth one hundred thousand dollars in order to have them.

You speak of farm economy, labor saving implements and all that kind of thing, but do not forget to help the poor fellow along. You will find it is in your power; I am sure it is.

Am I taking too much time?

President Scott: No. I wish you would speak of methods of conducting institutes.

I will tell you first what I would like to have to improve Farmers' Institutes. I would like to have better speakers employed by the State. Now, Mr. President, they like that.

A Voice: "Give us some more!"

We feel down where we live that nothing is too good for us (Applause), for we are farmers. I want you to realize with me that there ever has been a gulf between the country man and the city man. Now when you are thinking how to improve the Institute we will be glad to have you help bridge that chasm. We would like to have the city man quit patting us on the back and telling us we are the salt of the earth, that we are as good as anybody, and all that kind of thing. We know that. We would like to be told something that we do not know. We would like to have that chasm bridged over, because there is no occasion for it to exist. Possibly there was a reason for it at one time, but there is not now. The Institutes are doing more to bridge over that chasm than any other one influence perhaps.

Along the line of Institute work, I feel that usually a two-day session and one evening is too short a time. I want to speak of this especially because in my own community the Institute has the effect not only of teaching us something, but of bringing together those good people of our community who do not usually meet at any other time of the year. I met some of my good neighbors a few days ago at our Institute that do not live two miles away, and yet I have not had the opportunity of shaking hands with them since the last Institute. It was a grand meeting. We had dinner each day and supper in the evening. Everybody was your friend. We had good State speakers who gave us many good sentences.

Right along this line I want to suggest that you get somewhat away from raising pigs, calves, lambs, bigger corn and bigger potatoes, because I think our people in Miami County are pretty well equipped to raise all those kind of things; but there is another crop down there that we would like to have your help with, and that is to take care of our boys and girls. We would like to have you tell us some of those little things that are within the reach of everybody that will make the farm home for a boy and girl so that they will not leave to go to the city. Tell the boys how they can make some little improvements around the place and make it pleasant for father when he comes home from his day's work. Tell the daughters what they will be able to do for their mamma and their papa. Get them interested in home building and home making. There has been a tendency in our Institute, and in our country, in fact it is the condition everywhere, that we love entertainment better than we do knowledge. It is a fact to be regretted if you are arranging for a lecture course in any community, I do not care where it may be, the cry goes out in the beginning after you have appointed your very best people in order to plan the course, "Give us more entertainment. If we are going to have five numbers on our lecture course, not less than three of them must be entertainment numbers; we must have a lot of fun." Now, nobody loves fun better than I do, nobody loves a good anecdote better than I do, but a speaker occupying five minutes in telling a poor anecdote has wasted his time. Another good thing to cut out is school exhibitions at Farmers' Institutes. Better give the boys and girls a chance to have their exhibition on some other day, and cut it out entirely. I do not know whether I ought to tell all of this story or not, but I guess I will. At the close of one of the Institutes which I attended, one good brother of the German Baptist church who offered prayer, came to me at the close of the last night's session and took me by the hand. He said, "Brother Deam, I want to congratulate you." I said, "On what?" He said, "On the success of this Institute." I said, "I didn't make this Institute, you need not congratulate me, but congratulate our people. This session of our Institute has been worth in money one thousand dollars to this township." He said, "We cannot compute its value in the sentiment that has gone out from here." That is what we are looking for—we are looking for sentiment. If it shall be carried abroad and if each of the boys and girls will take home with them an influence that will make them better men and better women, we cannot measure the good that we will do. So I say there is a wonderful work for you on that line.

Now as to the matter of the management of Institutes, Mr. Chairman, I hardly know what to say. I am not talking for the Institute force, but to the farmers who may be present. It is customary when we attempt to organize for any purpose to look about and appoint a committee. We take it for granted that the fellow we think well of must have a whole lot of ability on that line, and we appoint him, and about nine times out of ten we appoint the wrong fellow; we do not appoint the fellow that has the ability to do the work. We appoint a fellow that we like pretty well. Now I want to suggest that in the organization of committees that these Institutes always come at busy times in our township. I do no know whether everybody is busy, but at our place we are usually on the run. This is our busy time of year. We have felt that the appointment of a good chairman is one of the essentials to a good Institute, then let the chairman say to the various members of the committees appointed that he expects each member to be entirely responsible for his part of the work. What is everybody's business is nobody's business. When you appoint a committee as a whole, and the whole committee is supposed to do the work, nobody does anything.

So much for getting ready for the Institute work. As I said, the greatest difficulty is the careful selection of the chairman, because he, as a rule, will make or break the Institute. I have attended a number of Institutes where there was the best kind of a working force, really first-class material at hand, but there was a lack of a good chairman of organization. If the chairman has no force, no ambition, no enthusiasm, he can drown the whole thing and make it a miserable failure. So I say you want to look very carefully after your organization.

Now, Mr. Chairman, I have talked long enough. I thank you.

President Scott: Ladies and gentlemen, you have listened to a very instructive talk from my worthy Brother Deam. He has given you food for thought, and possibly considerable food for discussion at your meetings. Now we are going to give you an opportunity to take this up and discuss it from the different standpoints which he has advanced today, from the side of the officers of the county institutes. I am going to be possibly a little tyrannical, I am going to give you all five minutes to talk upon this question, and will ask that you upon rising state your name and the county from which you come, so that our stenographer can get it. Remember that that is a mandatory rule when you rise to your feet and wish to be recognized. Let us have your suggestions. First we will have a little music.

Music: The Cecelian Ladies' Quartette.

President Scott: The afternoon seems to be waning pretty rapidly, and a genteman on the stage here suggests that we cut down the speakers to about three or four minutes.

Discussion.

Mr. Ensign, Greene County: Will the gentleman tell us how he manages an institute?

Mr. Deam: That is a pretty hard question, because there are some things that suggest themselves at the time; but my plan it to never let a minute be wasted. We say to our set speakers when they call on us, "When your name is called we expect you to be right there with the goods; we do not want any apologies from anybody. If you are not prepared, go home. If you are, be ready for business when your name is called." We say to our music people—we want a little entertainment and we always have some nice music—I always say to our music people, "When I give you the wink, you respond right then, or you will lose your place." I think I can say truthfully, and the brother who is down there this year will corroborate it, that we do not waste one minute's time; we can not afford it; it is too precious.

President Scott: I think that Brother Deam practices exactly what he preaches. I have been there twice. I do not dare to go down again.

Mr. Roudebush: I suggest that discussion be omitted until the other subjects have been presented and then we can discuss them more intelligently and not waste precious time.

The motion was seconded and carried by rising vote.

President Scott: We are going to have a little more entertainment for a few minutes. I take pleasure in introducing Miss Alta Stewart, of Cambridge, Ohio, who will afford you a short entertainment of possibly five minutes.

Miss Stewart gave an elocutionary selection which was heartily applauded.

President Scott: We will now be addressed by one of our worthy colleagues in the work, Mr. C. R. Wagner, of Arlington, whose subject is "The Institute Lecturer and His Equipment."

"THE INSTITUTE LECTURER AND HIS EQUIPMENT."

BY C. R. WAGNER, ARLINGTON, OHIO.

There is no doubt that the concensus of opinion among leading agricultural thinkers is that the Farmers' Institute has contributed in a measure toward the advancement of agriculture. This advancement has not only been along lines of better farm methods and practices, and higher quality in domesticated live stock and cereals, but better than all else, in a stronger self-reliance and a consequent higher standard of intellectual and social intercourse. You know it is said that "as a man thinketh in his heart, so is he," as a man rates himself and his business the world usually concedes the same rating.

The fact is that the Institute has caused men to think along broader lines, to reason by deeper methods, to ascribe scientific reasons to natural phenomena and less to chance. While all are willing to concede the advanced movement, yet down deep in our minds there arises a query: Has the Institute lecturer kept in advance; has he the ability to lead his audiences as truly as he did a quarter of a century ago? Now personally, I must answer in the negative; but in the same sentence let me give you reasons why he has not. He has been too busy. He is only human. With hard physical exertion there comes a consequent weakening of mental stamina. The mind is not so alert and ready to grasp the delicate reasoning and weave it into a fabric of fine even texture and finish. He has been unable to study the phraseology of his addresses, as does the popular lecturer, and cold humanity forgives nothing.

I note a greater commingling from year to year of urban, interurban and rural populace. This is indeed gratifying and a wonderful stimulus, not only to do better work, but in establishing a social equilibrium which cannot fail in the betterment of both classes. It serves to knock off the rough corners of our unsophisticated natures, and brings a realization of the simple life to the urban dweller. With these changing conditions the Institute lecturer finds it much more difficult and exacting to successfully meet the requirements of the work today than he did even a decade ago; and judging the future by the past, it must necessarily follow that the work will continue to grow more and more exacting and difficult from year to year.

To meet this condition of affairs at the most opportune moment is, I take it, the real reason of this present session. Here the State Baord of Agriculture, the officers of Farmers' Institutes and the Institute force meet for the sole purpose of conference, in order, by a pooling of experience and knowledge on the subject, to devise a perfect and more complete understanding, a more comprehensive system that will meet more fully the requirements of an advancing husbandry.

Mine is rather a difficult, yet not an irksome task to undertake, knowing from experience the extraordinary and varied experiences and conditions that a lecturer is called upon to meet, and that upon his ability to grasp upon a moment's notice the true situation of affairs lies his success or failure.

THE INSTITUTE LECTURER.

An European monarch, after witnessing the splendid results achieved by the United States armies in battle, ordered that his troops should be equipped with the same munitions of warfare (he believed the secret of success was in the pattern of the arms). Yet the result in battle was not as expected. After more mature reflection and investigation he decided that to achieve the same results he must needs import the men to manipulate the arms. So it is with the Institute lecture force. While equipment means much, yet the fact of much more importance is the man and his individuality, his natural alertness, his ability to see and act quickly and rationally; in short, his natural resources, his executive ability. There are some requisites, however, that the lecturer must possess, viz.: He must be first of all a man in the true sense of the word. He must possess (if he would hold the respect of the better classes) a true moral character, not simply the debris left from a wrecked life. He must hold within himself the inherent power to abstain entirely from the use of intoxicants and licensed debauchery. Like Caesar's wife, "he must be above suspicion." He must be a person that has made a success of life; not merely in the accumulation of dollars, for that in itself would be a narrow and a one-sided life, not such that the best type of manhood and womanhood should follow, but a much broader and nobler conception of the true meaning of life and its requirements; a man that can and does command the respect and good will of his neighbors and friends. I do not say that he will not have enemies, for these he will have, because there are always those in every community that are jealous of and prejudiced against a successful man, and who are ever ready and willing to block his progress. With success comes envy; with envy, malice; and with malice, hatred. It has been ever thus, and will likely so remain until the end of time. He must respect and reverence those institutions which have for their object the building up of a stronger manhood and womanhood, the strengthening of the intellectual powers of man; that foster the belief that the real destiny of man is upward and onward, viz.: Churches and schools. He must be in perfect sympathy and working harmony with those institutions that are nobly striving to enhance in value and respect the farmer's life, work and returns, and be willing and ready at all times to grant honor to whom honor is due, whether it be the State Board of Agriculture, the Agricultural College, the Experiment Station, or the agricultural press. Let him not forget that "in union there is strength," in counsel there is wisdom, and that "a house divided against itself cannot stand," and last, but not least, that our mutual aim at all times should be to advance agriculture.

We have thus hastily and briefly considered the lecturer, the power behind the throne, the man behind the gun. While the man is of primary importance, yet we would not have this understood as being all. He must go forth to battle well and thoroughly equipped, if he would succeed.

EQUIPMENT.

His must be a cosmopolitan character; he must be trained to meet people of all classes and walks of life; for here we meet upon a common level, the conservative farmer, the methodical school teacher, the skilled physisian, the exacting minister, the precise legal brother and the staid judge; all alike seem to be interested, and no doubt are, in that industry which has to do with the food and raiment supply of humanity, the foundation industry of man, and the one upon whose success rests all others.

As our meetings are provided for out of the public treasury, into which all are asked to deposit a portion of their earnings, we must extend to all a hearty welcome and a hearty invitation to take an active part in our deliberations and co-operate in making these meetings a success.

The Institute manager is expected to interest and entertain this motley crew of humanity. You at once realize that his is no easy task. He should have had the advantage of a reasonable English education. He must be actively identified with practical agriculture and possess a working knowledge of the subject he is talking upon.

Let me say that in the future our ranks must largely be recruited from those who have made a careful study of agriculture in our Ohio State University, or some other equally efficient institution of learning. We must sooner or later recognize the fact that as boys of the old school we are now living in a different time and clime, where in business matters and relations the law of the survival of the fittest reigns supreme; that the world and its ways move on whether we will or not; and that each year some of us will necessarily be laid upon the shelf as relics of the past, as monuments to our labors, the result of which is progress. I believe that until that time comes, however, provision should be made to carry out the work in the most intelligent manner.

That the lecturer should and must of necessity keep in advance of the majority of his audience goes without saying. How to do this is the all-important question now before us. Of course, it is to be expected that the lecturer is a close student of all that concerns his work and his agricultural knowledge, yet this is not sufficient, because the rural people now have not only the agricultural press and the countless number of bulletins and books to which all alike have access, but they are also reading and studying as never before, all of which gives the lecturer no special advantage.

The forces that have this matter under control should come to his assistance; the State Board of Agriculture, the Ohio State University, and the State Experiment Station should, out of the funds at their command, jointly furnish special advantages that the lecture force may avail themselves of. They should not forget the fact that the Farmers' Institute lecture force has been the direct source of much of the popularity now being enjoyed by these instituions.

With this end in view, these institutions should at once arrange for a special training class that would be in session not less than two full weeks annually. In this school actual and practical demonstration work should be compulsory upon the part of all. To illustrate: Classes in stock judging, grain judging, soil fertility, feeding rations, barn and outbuilding arrangements, etc., etc. To get the most possible time for the work give at least three sessions daily, forenoon, afternoon and evening, dividing the work into at least six divisions, viz.: Agronomy, live stock, grains and feeds, horticulture, dairying and entomology. Allow each scholar to select not to exceed three of the above. This would afford the opportunity of pursuing the work under expert and up-to-date instruction. This would also afford the lecturer an opportunity to combine his practical farming knowledge with the most recent scientific research and demonstration.

As a means of further equipment, after an opportunity of a term of say five years in lecture work, if his work proves satisfactory, after a careful inspection by an investigating committee of the lecturer's work and surroundings at home, his standing and reputation, etc., let not only his compensation be increased, but additional advantages and facilities be given to him to visit and study a limited time at other colleges, stations, and leading breeding and feeding establishments. Through this means we would have a constantly growing and broadening force, a force capable of leading to higher ideals and a more mature growth. This would no doubt be construed by some to savor of paternalism upon the part of the State. Not so, however, as agriculture is the real basis upon which prosperity rests, and not only that, it is the source of supply of the food and raiment of our constantly growing population. While it is true that the earth yields the wealth, yet it requires spirit and enterprise of the highest type to develop it; and upon the producers rests to a large extent the development which is to feed and clothe the millions yet to be. Anything that has for its object this development should, I take it, be heartily and systematically encouraged by all.

I wish to conclude by saying that I have faith in the Farmers' Institute as a means of doing universal good. I have faith in the lecture force as gentlemen, and as men seeking truth and knowledge. I have faith in the institutions that are backing up this work as a power for good and a furtherance of the gospel of progress. And last, but not least, I have faith in the people at large as supporters of a good cause and of universal prosperity.

Music: The Cecelian Ladies' Quartette.

President Scott: You have been well entertained during the afternoon by Mr. Deam's address on the officers' side of this question; you have been excellently entertained by the most excellent paper by my worthy co-worker, Mr. Wagner, upon the side of the lecturers; and now, for the balance of the convention you will be entertained by an address by Dr. H. M. Brown, of Hillsboro, Highland County, who will present the subject from the side of the State Board of Agriculture. His views are possibly their views.

"OUR INSTITUTES."

DR. H. M. BROWN, HILLSBORO, O.

Mr. President, Ladies and Gentlemen:—I am indebted to the first speaker of the afternoon for these notes that I have taken, upon which I hope to make a few remarks; and you are indebted to the remark he made in the discussion which prevents me from making an apology for unpreparedness.

Dr. Chamberlain, I would like to know how long the Institutes of Ohio have been running:

Dr. Chamberlain: They began in 1880-81.

I was thinking, when it was remarked this afternoon that we wanted better speakers here, I was wondering if there was any class of men that had ever done the same pioneer work who had proved as successful during the period in which they have been at work in creating as much interest as have the speakers at the Farmers' Institutes of this State. I know that our beautiful and time-honored Christian religion has been talked upon and lectured upon and worked upon for nineteen hundred years, and without any new material, without anything advanced, without anything which went in the lead to disseminate superior knowledge, the interest has continued without abatement and with increased intensity up to this moment; and when it is said that the speakers must have something new, that someone must go in the lead, that something must be turned up upon which they can predicate their labor, I think then of this beautiful Christian religion that has had nothing new for nineteen hundred years and yet whose interest has not abated in the least degree.

I believe that the subjects upon which we have been addressed this afternoon are of paramount importance. The watchword of the Institute speakers, the watchword of our endeavor, the keynote of the situation, and of all the problems that pertain to or interest the human race is comprised in that word "better," and during the afternoon when hearing the first speech I began to think of the things that might be suggested by me when my turn came that would probably improve our condition, and I have taken these notes.

In the first place, I have put down "Call for subjects." It has come to my mind several times and particularly so this afternoon that on many questions when speakers have not received the attention due to their ability, that it was because of the incompatibility of the subjects they touched upon to the wants of the community. I have thought that it would be well if the Secretary of the State Board of Agriculture, who has these things in charge, would notify the committees in advance to very carefully, deliberately and advisedly find out what is better to be discussed in their community, which may be submitted to him, and then for him to select from his list of Institute speakers those men who are in affinity or who are en rapport with that particular thing, and send such individuals to that point. (Applause.)

The next note I have taken is, "No popular session." Now I think that the proper way has been to go out and place your feet upon the ground and expend your efforts upon the empty air by painting pictures on the sky. I believe the time has come when the necessity of a popular session for the purpose of disseminating interest has been outlived. I believe that the interest in the real substantial work of the meetings and the purpose for which they are called is sufficiently great among the people for us to discourage or to expunge that particular session which we call a "popular session," which has no reference to the subject in hand in which we, as farmers, are interested. (Applause.) I know that a great many of the speakers dread with an inexpressible apprehension the time coming when they will have to address a mixed audience, particularly a large audience composed of a number of citizens that are not interested in farming, but who come for the purpose of being entertained by a brilliant speech. Many of our men who are very capable as farmers and as experimenters, extremely capable along all the lines which they attempt to treat, do not feel at home when they try to speak upon so-called "popular subjects." (Applause.) I think that that might be modified at least at some of the places. At other places where it seems they demand a popular session, that could be granted, and a person selected who is capable of addressing an audience in a popular way.

On the other hand, I have seen the utility of an Institute session very much deteriorated by the inability of persons to speak freely upon subjects which are under discussion, by reason of the presence of ladies. There are a good many subjects that come up in Farmers' Institutes that can be discussed and threshed out in all directions to the advantage of farmers to a larger degree if ladies are not present. Then I suggest that we have during some of the Institutues, one session for men only, and I would suggest that this be a night session, to take the place of the "popular session." The same evening there might be held a local women's institute in a separate place, if a suitable place could be procured the same evening; and then when the men's session is through and the ladies' session is through, the men can go to the ladies' building and take them home, and they will all have enjoyed themselves as well, and most of them very much more beneficially than in one large session such as is termed "popular."

The next thing I have noted is the reading of books. If I were lecturing upon a technical subject today, you would be interested in everything I said, no doubt, but you would probably not take it home and write it upon your memory thoroughly, but you would have been stimulated in your own inward conception and an incentive given you to go home and look up the subject further. Now suppose that you have not anything at home to look the subject up in and complete it, then all of the incentive that you have received, all of the desire to become more efficient along the line of the subject that had been discussed would avail you nothing if you did not have the books. I very seldom hear an Institute speaker telling the people what books are good authority upon the subjects that he teaches. I think I know the reason why; one always draws his own conclusions from his own experience as a rule. I used to lecture to students, and necessarily had to crib a whole lot of the stuff; and while I wished them to fully learn the subject, I did not wish them to learn out of the same books from which I was lecturing (laughter), because they would find out that I had cribbed the whole business. Now these men who teach subjects should teach their hearers also what books have further information which their hearers can follow up; and if a list of the authorities are given out to the community it will be most beneficial. They should be encouraged to start a little library. The Institute should become the incentive and stimulation for those attending the sessions to read more and become more informed and more efficient.

I think also that local organizations ought to be encouraged by the Institute speakers and the suggestions made to people where they go that it would be well for them to organize a little home Institute which could meet every two months, or something like that, and appoint a program committee whose duty it should be to select the subjects, start the discussions and arouse interest, so as to keep the Institute feeling aroused the year round like the revivals which are held from one year to another.

The State Board of Agriculture conceived the idea two years ago of holding a speakers' institute, and to have two days' session, or perhaps one day.

The first day aroused a great deal of interest, and we learned at that session that there was no one of us that was transcendently superior to any other of us, and we began to have more confidence in ourselves than we had before, because when we rubbed up against the big fellows we found they treated us well. Dr. Chamberlain was there, and the whole bunch, and he did not frighten anybody, and when we got up to speak none of us fell down or were particularly disturbed, because Dr. Chamberlain had no unkind criticism. When he got up and discussed things he and all the balance of the old fellows treated with respect anything that we had to say. We began to feel then that none of us were very much superior to the balance of us.

This year there was a demand for more of that sort of thing, and we had two days with Professors Thorne, Vivian and others that just held us in the leash of transfiguration for hours before we knew it. We learned immensely. It seemed one of the best things that we had ever done. Now then the question has been asked whether or not we could not afford to hold such a session for a week. It occurs to me that that is one of the best things, for the best speakers to come there and teach the balance of us, while even those that are not the best always have something they can tell the best of them that they never heard before. I practiced medicine for many years and thought I was a scientific practitioner. I was a graduate of two schools; I had been in half a dozen foreign hospitals, and I thought I was very well equipped. I felt very large about things, but I learned many years ago that I never met an old woman in connection with any kind of a case or problem that came up in my profession that I could not learn from her. (Applause.) Old traditions that have gone on for years and years without being forgotten or eliminated, no matter how unimportant, no matter how superstitious they may appear, yet old traditions that have lasted for a hundred years are likely to have something in them.

Now it is time, I think, for the president who is controlling the Institute, to bring out to the audience what there is that is good in the subject. I have attended Institutes a little myself. Institute lecturers, that no doubt surprises you, but I have been doing it, and I have had this to take place: An Institute speaker would get up and get about half done, then another one would follow him, and then music and then other addresses, and it would turn out that not one single individual on the floor got to express himself fully on any subject that he wanted to express. Now those things are all wrong. Those things should be looked after. I do think that the time has come when some advanced ground must be taken. Notwithstanding that the Institute speakers have conributed largely to the most splendid progress and present prosperity of this magnificent commonwealth; notwithstanding, I say, that they may take much credit for our present state, we have reached a point where some advanced ground must be taken. Many things occur to me that might be suggested. We could have a regular Institute building, a regular faculty and a college in the State if we could afford it. We could have demonstrations by men of scientific and technical knowledge. We could have our people go there and take an Institute course. That would be a splendid thing, but that cannot be done. Possibly after awhile it might be done, but it is doubtful. But I really think that the time is approaching now when it will be extensively demanded that advanced grounds be taken, and that it will be possible to have a scientific man who has worked out opinions from original research, with his equipment, his demonstrations, with a lantern, so that he may practically illustrate his subject. Such a man could be sent to every County Institute in the State in two years' time and demonstrate the things that are incapable of being demonstrated by ordinary Institute speakers. That is only a tentative suggestion that I think probably could be carried out.

I think we could have practical men who are teaching in universities that could come and see a part of us in the State at least every year until we have some means by which we could bear the expense of enlarging it, to demonstrate things that seem bewildering to us as we read them in scientific books and in the bulletins, and as we hear them didactically expounded by Institute speakers who are minus adequate means of demonstration. I believe something of that sort will finally be the result of our endeavors.

Now I am pretty near through. I hope that what I have said and what I shall say further will be of sufficient interest to bring out a discussion. I do not think there is very much in what a lecturer says unless it sufficiently stimulates the thought of his audience so that they wish themselves to make suggestions and discuss it. I have only one more thing to say.

I believe that the Ohio State Fair is a very important school of education for the youth of the State, for the aged of the State, for the women and the men. I think if every Institute speaker was requested or required by the State Board of Agriculture to put in a few minutes in disseminating a spirit of desire to attend our State Fair and to get out of it what is possible to be learned in it, and have that subject discussed a little at every Institute, it would go a great way toward improving and accomplishing the work that we are all attempting to do.

Mr. President, gentlemen and ladies, I thank you. (Applause.)

Discussion.

President Scott: You have listened to an excellent talk from Dr. Brown from the State Board's side of this question, as to the best means or method possible to conduct farmers' institutes. You have also had opportunity to listen to the other two gentlemen. It is now up to you, ladies and gentlemen, to take this matter up and discuss it for a short time from all three of the different standpoints, and we will only give you three minutes apiece. Whom shall I hear first?

Mr. Hanna, Wood County: Mr. Chairman and gentlemen, I have had a little experience on the other side of institute work in helping to conduct our local institutes. I have met a great many of the good speakers that have attended our institute, and the question always has been with me how to awake enthusiasm. I hit upon a plan this year that I like very much. I have not heard it spoken of here; namely, that each institute at the time of its being organized should appoint two shrewd people, one gentleman and one lady, to write questions so formed as to draw out matter that has not been brought out, but which would naturally pertain to the subject under consideration. Then when the discussion is opened these questions are drawn from the question box. I find that with the aid of these experts to select questions they will bring out from the various speakers expressions that we would not get otherwise. Many of our local people are backward about getting on their feet, but when a question is placed before the institute and their attention directed to it they will rise to their feet and much benefit will be derived in that way. I like that plan very much.

Mr. Fleck, Paulding County: Mr, Chairman, I have been very much impressed with the speakers' expressions in regard to preparing for institute work and what we are to do when we get there. We have a "popular session" in our institute. We think it is beneficial. We touch on temperance pretty strongly in that. One thing I wish to speak of is the fact that we scarcely have enough time to advertise our institute. I think if the State Board would issue bulletins announcing the institute dates a little earlier it would give us more time to advertise the meeting, and I think we would have a better institute. Two years ago we had a corn exhibit, and a lecturer there. This year the corn was a failure. We had some corn on exhibition, but no contest. I believe it would be helpful to us if we could have an earlier issue of the bulletins so that we could have a little time to advertise.

President Scott: I would suggest that the delay spoken of was due to unavoidable causes. It was not the fault of the State Board. Possibly the same causes will not occur again.

Mr. Kellow, Madison County: Mr. Chairman, I have been much interested in these agricultural meetings and the meetings of the county institutes held throughout the state. They have always been of great interest to me, such as I have had the opportunity to attend. I was interested in Dr. Brown's remarks and in his review of institute work back since 1881 and the various improvements. He does not seem to express any particular necessity for a change, or at least a great improvement, and he said that the church had existed for nineteen hundred years without any particular change in its fundamental principles; but the church has had all those years the support of missionaries, Sabbath schools and so on, but I feel that the state institutes need the support of the grange, and it behooves the farmers to unite in that national order, which has been one the greatest incentives to bringing the farmers to a realization of their rights and responsibilities. Having in my earlier days had a little grange experience I feel as if I can safely say this to you. The grange is doing great good. Now the speakers at our state institutes have sought for means to improve them, and they have been an industrious and wide-awake set of men whom I am always pleased to meet. The thought came to me a moment ago that it might be a good idea to hold a camp meeting in the interest of the State Farmers' Institute. I have found that one of the greatest helps in our county institute work has been its tendency to bring the farmers upon their feet. If the state speakers are able by means of their addresses and their ideas to stimulate the local people to get upon their feet and tell their experience it is a splendid thing. We like to have the experience of people at short range; we like to hear from somebody in our own locality who has been working in the same climate and on the same soil; and we regard that as the best evidence in many cases. Now as we have others who wish to speak I will not occupy any more time. I thank you.

President Scott: Dr. Chamberlain, we want to hear from you for a few minutes. I think all of us do.

Dr. Chamberlain: Mr. Chairman and gentlemen, the wonderful thing to me is that the kernel of corn planted in 1880 on the top of the mountains has filled all of the land as it has with the work of these institutes. It is glory enough for one man who begins to think that he is a young old man, to think that he was the means under God of starting this thing moving; and I believe that, on the whole, the institute lecturers have kept in advance of the procession. Old Johnny Boggs, of whom you have heard, the wit of our locality, once was the marshal at a funeral. He found that the preacher and the pall bearers were getting a little away from the procession. So he rode forward rapidly on his horse and said, "Hold on there, Mr. Preacher, hold on, you Mr. Pall Bearers, don't drive so fast, the corpse can't keep up with you!" I, will tell you, my friends, that the institute speakers have kept well in advance of the agricultural corpse up to the present time.

I have ceased to be an institute speaker myself. Other duties claim my attention, although I was put upon the force this year. So I can say what I please of the institute speakers. They have kept well in advance. The thing I liked best in Mr. Brown's remarks, although they were all good from a scientific gentleman; but the two suggestions that I liked best were those that we have at least a week when we could listen to men who have devoted themselves to the practical application of science to agriculture, such men as Professor Vivian up here at the University—and there is no better man in the United States (applause) —and Profesor Thorne, of the experiement station, than whom there is no better or more thorough man in his place in the United States. (Applause.) I like his suggestion that we could usefully employ a week in listening to men like those and a dozen others that I could name, who could come with their lantern slides and other means and appliances for work and show to you institute speakers exactly how things work. You remember that in "Helen's Babies" those little fellows would be constantly wanting to get their uncle's watch open, they were butting in at all times, they wanted to "see the wheels go wound." I tell you, the farmers want to "see the wheels go wound;" they want to know how those chemicals act; they want to know the constituents of the various elements that go into our feeds and our fertilizers. They want to be told by scientific men all these things, and if our institute workers could have a week devoted to this purpose and have such men appear before them with their appliances, or take them to their laboratories, it seems to me it would be a great help. I like that suggestion of sending out one or two of those scientific men with their very best lantern slides. They would not provide such an entertainment as you would see at a vaudeville, dancing, pictures or what not, nothing of that kind, but something that would illustrate the actual working of the scientific mind and the scientific hand in unfolding the great secrets of nature. That is the sort of thing that we want to be better acquainted with. There seems to have been growth on the part of teachers of agriculture everywhere, and the institute lecturers have shown an amazing growth since 1880. There has also been great progress in the knowledge of the farmers themselves, in their social life and in everything that pertains to the uplifting of the farmer, not a little of which is due to the splendid work of those self-denying men who have gone forth to lecture, such men as described in Mr. Wagner's paper. That is the type of men who should go out as lecturers. He pictured them exactly. (Applause.)

Mr. Harmon, Lancaster: Mr. Chairman and gentlemen, let me suggest something that I presented to the State Experiment Station some years ago, and also to the National. In every institute we find some young man or young lady who has a few magnifying glasses. I suggested that they make some slides to illustrate the adulteration of seed such as clover and alfalfa, selecting pure seed as a sample. It seems to me that that would be along the line of Dr. Chamberlain's suggestion as illustrating some of the secrets of nature. Many of us can not tell in some cases pure seed from adulterated seed, and that is why men are tempted to adulterate so often; and especially is this the case with high priced seeds, for there the temptation is very great. It seems to me that such slides would be a valuable aid in protecting the growers from phony seeds. There is another matter that suggests itself to me for the first time. One speaker spoke very sympathetically of the condition of our farmers' wives, but it seems to me that he did not say enough. He only suggested improvement in the matter of better light. I wish to suggest another thing. I would like to ask these farmers here to tell us how many of them have water in their kitchens, how many of them have hot water, and how many of them have bath rooms. Yet they could all have these conveniences at small expense. A man who builds a house and does not put in it a tank that will hold ten or fifteen barrels of water has failed to do his full duty to his wife. Water can be forced into a tank with a wind mill or by means of a small engine, and this water can be heated easily from the stove. In our city we did not have water for many years, but I always had hot water in my kitchen, and I had my cistern water in the house. Many people could have these conveniences with a little effort. By putting a half curve in a pipe you can heat a barrel of water on the next floor until it is very hot. I have heard water boiling many a time fifteen feet away from the stove. If you men would put in such conveniences you would save the women a great deal of work. There should be means provided of running the waste water from the kitchen instead of the women having to carry the dish water out into the cold weather as is the case with many farmers. Whether this work is done by your wives or daughters, or your good help, their comfort and convenience should be looked after by having hot water and a good bath in the house. (Applause.)

Mr. McCoy, Fayette County: Mr. Chairman, I feel that it is my duty to say a few words more, especially in regard to the state speakers that have been in our community. I live some nine miles from any railway, and we have to convey the speakers from the station. Two years ago we formed an organization which resulted in the State Board sending speakers to us, and you do not know how much good those men have done in our community. The first year they sent Mr. Dobie and Mr. Buchanan; the next year Mr. Roudebush and Mr. Dunlap. I just want to say to the State Board that we do not want you to send us any better men. I will tell you why. We do not want, in our community, to think any less of those four gentlemen that have been so good to us. (Applause.) I was mighty sad this afternoon when I learned one thing that I never knew before about the farmers of Miami County, here, making slaves of their wives. We do not do that in Fayette.

Mr. Darling, Coshocton County: I would like to speak a word in regard to the conduct of the institute and especially as to getting up a program. With many the preparation of the program is put off too long. They do not select the subject that the state speaker is to address them upon until there is barely time to get the programs printed. They should select the subject at least three weeks beforehand, and then appoint some one to open the discussion on that particular subject after the set speaker is through. In that way you will start a better discussion and get more benefit from it. I have always found in every institute I have ever attended that the trouble is to get a discussion started. After it is once started it will take care of itself, and by appointing some person whose duty it shall be to open the discussion the trouble is bridged over.

President Scott: The gentleman's suggestions are excellent.

Mr. Wiley: In regard to the selection of subjects and their adaptation to the wants of the community, which was referred to by one of the speakers, we have to select those topics from the list given us, and we take it for granted that the gentlemen named on the lists are experts in that particular line, on the subjects attached after their names. If they are failures the local committee is not to blame. So if lecturers are assigned topics about which they know very little and can not make a success, we have no means of being aware of that.

Now a word about another matter. I have noticed the difficulty in commencing promptly. If I was in charge of a meeting I would hold everyone to time. I do not want to criticize our institute speakers; they are all good men, but I have noticed that sometimes when questions are suggested to them they do not seem to be able to answer them without making a long speech and running into the time of the next number on the program. Sometimes they are like the young man at a young people's meeting who spoke upon a missionary topic and occupied an hour. One gentleman asked another what he thought about his remarks. The reply was, "Well, his speech was good enough, but the young man discussed more subjects than could have been properly treated in a hundred volumes." So don't attempt to do too much.

You men are all going around as agricultural missionaries, and by and by like some of the rest of us you will get gray in the work and you will have to pick out of the community your successors. I would like to suggest that the State Board pick out at different points some young, promising men and encourage them to prepare papers or give lectures. Such a young man may have to be urged to make a start at such work, but if you succeed in getting him to write or talk upon any subject you have him interested for life. I was a little surprised, although not much surprised, at what the gentleman said about the lives of our angelic wives being made unpleasant. It reminds me of a family up in the mountains of Virginia. They were very poor. The old man and the boys hunted and the old lady kept the cabin and cut the wood. It happened that a part of the tract of land they occupied was found to contain valuable metals and an oil well, and they sold out for a number of thousand dollars. So this loving father and these loving sons began to discuss what they would do with the money. They never had had twenty dollars all at one time before in their lives. Christmas was coming and they said, "We must do something for mother, what shall we do?" Finally they decided they would buy the old lady a new axe. (Laughter.)

Mr. Bradfute, Greene County: Mr. Chairman, Dr. Brown suggested that he thought it would be a good idea if the farmers' institutes would designate to the State Board of Agriculture along what line they wished to have matters discussed. I recognize at once that this might be almost impossible, because it would mean, on the part of the State Board, that they would have to send the men for very long distances at times, whereas at present they can send the men who are nearest to the point where they are needed; yet there are times when the State Board could wisely send out men differently from what they now do if they knew matters which the various institutes would prefer to have discussed over the state long enough in advance. I want to say to those gentlemen who are engaged in institute work that when you do go to a community and you find that they are not after the style of your thinking, that you stick to your text any way. (Applause.) I remember two or three years ago a gentleman came to our institute at Cedarville, and found that everybody there was interested in live stock. His specialty was gardening and growing melons. He came to me and said, "What in the world will I do? There is not a melon man in this whole country; I do not know what to do." I said, "My friend, you get up and talk melons, and I promise you that this audience will listen to you and give a courteous hearing." Well, he got up and talked upon his subject, and there was not a person went out, everybody was interested. It is the man who taks about something that he knows about that will interest people, I don't care what the subject is. I remember a few years ago that I, in company with another gentleman, Mr. Begg here, both of us being live stock men, was sent to the suburbs of Cincinnati to talk about cattle. There was nothing else for us to do but speak on that subject, and we did. I do not know that I ever attended an institute where they heard us apparently more gladly and congratulated us more on what we had to say. I don't know whether they got any good out of it or not, but I do know if a man is going to talk he ought to talk about those things that he knows, and not try to tell something else because he thinks his audience is not in sympathy with him, because the audience will always listen to a man who is telling what he knows.

There is another thing that I think would be of great advantage to this state, and that is the taking up of, shall I say a teacher's course, for the farmers' institute men. There are no men in this state who are more anxious to learn than the farmers' institute workers; men who want to know facts and who are searching for facts. That has been their life work. I believe the state of Ohio owes it to these men to put the very best opportunities they have at command before them. (Applause.) Only last week it was my good fortune to be in a distant city where I witnessed at a great university before six hundred short course students what was known as meat dissection; and do you know, I wish that every farmers' institute man in Ohio, who is interested in cattle, sheep and hogs, could have been there and seen what I saw. There were seen those animals on their feet and shortly afterwards slaughtered and butchered by an expert butcher, a man who knew just what he would find inside of each carcass. As each cut was made he would hold it up and show why one way of cutting it was better than another, comparing the best and the inferior methods. This was done before six hundred young men, and was something that they will never forget. If such an exhibiton could be made before our institute workers, men who are talking cattle, sheep and hogs, they would have something to talk to the people that they could never get in any other way. They killed some of the finest animals that could be had. Among them was a wether that was grown by the King of England, one of the very best that has ever come to this country. It takes money to do those things, but something of that kind is what I would like to see done here in Ohio.

Mr. Tussing: We have an institute that runs the year round. Brother Begg has been with us, and I think Brother Scott.

Mr. Roudebush, Clermont County: For the past three or four years in Clermont County we have sent to each one of the leading county papers a list with the names and postoffice addresses of the lecturers that would appear at each one of the institutes, with their specialties. For instance, this year Brother Brigham is listed, as a professional trucker. Brother Baldwin, who was at Milford some time ago, was strong along dairy lines. Brother Hine knows more about horses than almost anybody, not excepting even my friend Dr. Brown. We have done this in order to anticipate such inquiries as frequently come to us, "What do you know about so and so, what is his specialty?" The different institutes have confidence in our statements and in this way they are able to select what they want. There are so many new men coming on as lecturers that many of the farmers of Ohio do not know their specialties, do not know wherein they are strong, or weak. I think it is a great aid in this way to send out the names and give the information as we have it, along the lines of speakers' specialties, and then our local institutes can fill in with local speakers also, to good advantage. I do want to say that the greatest need today, in my judgment, in Ohio, is to get the man who needs the work of the farmers' institute to attend it. That is the problem. (Applause.)

Mr. Eversole, Pickaway County: With reference to the suggestion that the board send speakers to localities, who are familiar with the products raised in such localities, I like that very much. I congratulate Dr. Brown upon his suggestion. I am proud to have come from one of the great corn, cattle and hog growing counties of the state of Ohio, Pickaway County. I have been attending the farmers' institutes at Ashville, for quite a number of years, and while the men who have been our speakers have been able men in their lines, you have been sending down to Ashville men who, while they possessed scientific attainments, did not know anything about raising corn or short horned cattle. You have been sending down to us people who were in the dairy business in the northern part of the state, and who were capable of talking very intelligently on that subject, but on no other lines. This is a mistake. Another thing, you have been assigning subjects for discussion at Ashville that are not pertinent to our interests at all, things that we do not care anything about. I do not say that has been the case all the time, but it has been so very frequently. It does seem to me that the men who select the speakers should know our wants in Pickaway County, and they ought to take great pains to select subjects to suit the people of our county. We have had quite a number of chicken fanciers sent to our county who discuss the subject of poultry, whereas I do not know of a chicken range in my county or anyone who makes a specialty of chickens. I assure you that if a long-legged Shanghai rooster would show himself there he would not be alive twenty-four hours. Send us such men as J. Al Dobie, who can talk about corn and such things as that, cattle and hogs; or send us some men like Allen O. Myers, or Joseph E. Wing, who can talk something about alfalfa, and you will suit Pickaway County to a dot.

Dr. Brown: As the last remarks are addressed to the governing board of the institute, as a representative of the Ohio State Board of Agriculture I want to answer, in a measure, some things that were suggested. In the first place, we recognize that down in Pickaway County they raise cattle and they raise corn, and, of course, feed hogs, and we recognize that it would be well, if it were possible, to send men that are capable along the lines of interest in any special locality, if we have the men. Take Mr. Brigham for instance—and I hope he will pardon me when I take him as an example—he is a trucker. There are times in the winter during the institute season when it would be unreasonable to ask him to leave his business for five dollars a day, which would in no way compensate him. Again, Mr. Bradfute would be probably the most efficient man to send you, but we can not hire him for five dollars a day to go down and talk to you people. Those are things that we can not succeed in doing. We can not get men to neglect their own interests to go to you at the season when you want them always. So we must send the men we have at command, and you must excuse the fact that they can not always speak along the lines that are your specialties; but I wish to say further that a community which can not be interested in chickens, and can not be interested in some degree in trucking and cares nothing about anything else but live stock, is radically wrong. (Applause.)

Mr. Begg, Allen County: I have been exceedingly interested in the discussion along the line that Dr. Brown has suggested. Now I want to say a word. I have had a good deal of experience in institute work. Years ago, when I was newer in the work than I am now, when the Hon. W. W. Miller, now deceased, was secretary of the State Board of Agriculture, he sent me down in Perry and Hocking counties among the hills. I had never been there before, and if you ever saw an embarrassed man it was the speaker when he went down to talk to those people. When I got back I spoke to the secretary about it, and I will give you his theory, which was not a bad one after all. "Why," he said, "Begg, I can send you up in northern Ohio, or in the corn growing and stock growing sections of the state, but it is supposed that the men in that section of the country know about as much as you do on that line, or probably more, and we want to send you to a place where they are not supposed to be so well versed along those special lines. It is your mission to go down in that country and stir them up, and awaken an interest in these subjects with which you are supposed to be more familiar than the men living there and have transacted the business on a larger scale." I want to say, my good people, that there is a whole lot of truth in that, and after I took that view of it I was just as willing to go in Lawrence County and talk agriculture as to go to Putnam County where the conditions are familiar to me. There are certain underlying principles in agriculture, such as the condition of the soil, keeping up of soil fertility, the feeding of stock and such things as that, that it is just as essential to know the details of in the man who raises a small amount as the man who raises a larger amount.

Another thing, it is almost entirely impossible for the State Board of Agriculture to arrange circuits and send out men to advantage, and not once in awhile get some of them in territory which is not exactly like that from which they come. So you are asking something of the State Board which it is impracticable to do. I believe that that part of it was wisely conducted throughout Mr. Miller's administration and also that of our present Board. I do not believe that that objection can be properly raised to any institute man who goes out on the mission of instructing farmers along the line of practical agriculture. (Applause.)

Mr. Murphy, Delaware County: Mr. Chairman, I have been connected with our local institutes all over the state and would like to speak from the standpoint of one whose experience has been along that line. Suppose you are elected as a member of the excutive committee or as secretary of your local institute. In a good many localitites it is considered a favor to be parceled around among the new members every year. They elect a new secretary, a new president and a new executive committee every year. I wish something might be done to avoid that, because if they are all new officers they know nothing about preparing the program and nothing about carrying on the institute. You are sent a book with a list of speakers and their subjects, and from this material you are supposed to prepare your program. The time is also given that the speakers will occupy in their addresses, and you prepare your program with that time in view. Many of the state speakers overreach that time considerably, so that in such cases the program is too crowded, so much so that the discussion is cut off. I lay that partly to the state speakers speaking over time. (A Voice: "Give it to them.") It may be due to the presidents not calling them down when their time is up. They ought to do that.

One speaker referred to the farmers over the state being on a lower level than the state speakers measured them up. He said the speakers generally came in contact with the best of the farmers in their homes. That is true, and the only way to reach those on a lower level, the poorer farmers, is through the example of those who are taught in the farmers' institute. You teach the better farmers over the state and the others will follow their example. In every community where there is a man who has succeeded, all his neighbors will look to him for advice and instruction in one way or another, and they will follow his example.

There is another matter I wish to speak of today, because this is a general discussion, I understand. I do not mean to be critical, but I do wish to state facts. . I have attended institutes where I have heard the state's speakers deliver the same addresses they gave fourteen or fifteen years ago. (A Voice: "Amen!" and laughter.) Fifteen years ago it was a very able address. This year, or next year, it will be considered a very ordinary address. (Applause.)

Dr. Chamberlain: The saying is that "open confession is good for the soul," but when public confession is made by the other fellow, I do not know about that.

Mr. Moore, Coshocton County: Mr. Chairman, I think it is a good idea to send lecturers to districts where the agricultural pursuits are in contrast to those of the speakers. As a rule they know something about their own specialties. You take corn. In our community I know we have a great many corn raisers and half of them have not good gardens. One gentleman said that they raised corn in his country. I will bet he doesn't know how to raise a good garden. I raise corn, hogs, sheep and cattle, but I heard Mr. Brigham two or three years ago talk about gardening, and I learned more than I ever knew before. My mother raised the garden on our farm. You want to send men into the field to wake people up and teach them something else besides their regular routine. (Applause.)

Mr. Eversole, Pickaway County: The gentleman remarked that he bet I didn't know anything about gardening. Now I want to say that we raise more melons than any other three counties in the state. I raise twenty or twenty-five acres of them every year. I think I can teach the gentlemen today how to raise real old Tip Top melons.

Mr. Brigham: I think you will have to show me.

Mr. Eversole: Let me show him?

President Scott: No, that is irrelevant to the subject under discussion, which is the farmers' institute.

Mr. Culbertson, Coshocton: I believe that this matter has been pretty well discussed. I am getting hungry.

Mr. Shirer, Montgomery County: I have just been wondering this afternoon whether my prophecy is going to come true. I used to tell them I was John the Baptist, going before and preparing the way for these great scientific men to come and fill our places in the farmers' institute. It looks like that time has come now. You know I was in this work before I was prepared, and now I am studying up to see what wonderful lies I told. I always realized when I was at it that it was a case of the blind leading the blind. Now I have the work done and I am sitting up nights studying to see how many lies or truths I told. I am glad of this high sentiment, that you are going to do better in the future. That was what I used to tell them; that I was John the Baptist, leading the way. The farmers' institutes are intended to reach the poor farmer. I am reminded of a man in our state who was very anxious to build missionary churches at very inferior locations. He was severely criticised for his choice of locations, but he said, "If you want to catch rats you will have to place the traps where the rats are." In other words, he wanted to plant churches where the sinners were. In the beginning, when the institute work was first established, instead of looking for the poor farmer, they generally picked out some town in which to hold the institute where the lecturers could find good hotels. (Laughter.) Let them go out among the poor farmers and bring up the lower strata. If you want to elevate the entire community through the institutes you must begin with the poor farmer. You can not help them much longer unless you go to work in a different direction. Can not the State Board devise some means of interesting the lower strata?

Mr. Allen O. Myers, Franklin County: On behalf of the lower strata, living on a small farm, I want to say something. Everybody is dodging the truth. The fact is, the institute lecturer is not equal to his job. I mean by that there is too much style. The instructors sent out by the State Board want some one to come and meet them and escort them to the hotel. Well, they do not do it. The next thing, I find there are some speakers on the institute force who think that the audience is there for their benefit. Every one of those people is a failure; they are there for the audience's benefit. When they try to hold up the audience for their benefit they are not onto their job. Another thing, I find that the institute speakers wrap the dignity of their position around them when they go into a town; they expect to be taken to the best hotel and plank themselves down there, and as soon as their speeches are over nobody can get in to see them unless they give the grand sign and the hail word. The best men who are doing the best work get close to the people. There is too much of this sort of thing. My friend Wagner wants the lecturer to be a polished gentleman, just turned out of college. Now if he was that sort of a man he could make more money at something else, he could not afford to lecture at institutes at five dollars a day. Institute lecturers are practical men or should be such.

The farmers' institute is the only unbought place where he has a chance to speak. Everything else is bribed or purchased but the farmers' institute. The speaker who addresses such an audience has one of the grandest opportunities that will ever come to him. I would not give a snap for a man who can not get them to asking questions before he sits down. He should not shoot above the heads of the audience. I have heard speakers of very scientific attainments, but before they got through they were using such big words that nobody knew what they were talking about. I have heard institute speakers quote Latin (laughter), and there was not one in a dozen that knew what they were talking about. They should get down to the audience. Instead of that they were trying to impress the audience with the fact that they were learned and educated —and they were not. The most splendidly equipped man that I ever saw you could never tell by his language, it was so beautiful and simple, that he was learned. I have a great many volumes on oratory that I have looked over, and if you study them you will find that the grandest speakers were men that never used quotations from foreign languages. John B. Gough's lecture on temperance and Lincoln's Gettysburg speech are masterpieces because they reach the hearts of the people. I hate to hear speakers throwing Latin at their audiences to prove that they are educated, when probably they do not know what they are talking about.

Mr. Beam, Coshocton County: I am exceedingly glad of the tendency of this session to pay more attention to the lower strata. I want to pay a tribute to our local state fairs, which are a grand educational force. I care not what your fad may be as an institute speaker, you can make use in your work of the things that have been mentioned here today.

The great objection I see to the institutes as an educational means is their short duration. We become inspired in these meetings and we go back to our home localities where we will all find the lower strata that was mentioned by Brother Deam, although I think he exaggerated a little, but the lower strata does exist, and we are surrounded by it three hundred and sixty-five days of the year.

As another educational means I want to mention the short course in agriculture at the Ohio State University. We can not expect our farm boys to take a four years' course, but we can encourage them to take a ten weeks' course, which is begun at a time when they can attend as well as not. Such a course will cost something between thirty and sixty dollars, and there are thousands of young men in the state that need it.

Mr. Smith, Fairfield County: I am not a state speaker, nor do I ever expect to be; but I want to say for the state speakers that when they come down to our town we do not see any exhibition of that dignity that has been referred to. They were just farmers; they came like farmers.

Mr. Sheets, Wood County: I represent an institute that is twelve years old. I believe I can count fourteen men in this audience who have been at our place as state lecturers, and I have the first one of them yet to find to whom I could not walk up and grasp his hand, such men as Dr. Chamberlain, Dr. Farnsworth and other men right here. I think they have come right down to the level of the farmers. The trouble is that we do not always go up to these gentlemen and get right hold of them. I am president of our institute. Brother Farnsworth will be at our place the twenty-fourth of this month. Brother Dobie has been there. He knows how we get along. We have been benfited by everyone of the speakers who has addressed us. Not only have we learned from them, but they have learned from us. The idea that they think they are away above us is not true; we must not get such an impression as that. I ought to know how to raise hogs or judge corn, but I learned more at the institute of how to judge corn than I ever did in all my life before. I found I had been making a mistake all my life. Let us not get such an impression of our lecturers; that is not what they are sent to us for. Let us not think that they think they are head and shoulders above us; they don't; we are just afraid of them. (Applause.)

Dr. Fair, Cuyahoga County: I have been intensely interested in listening to all these different suggestions and discussions; and it occurs to me that if all the members of the different institutes in Ohio would make it part of their business to bring a few of the poorer class to the farmers' institutes the difficulty complained of would be overcome, and the lecturers would be very popular.

Mr. Bailey, Belmont County: I would like to make an announcement now in regard to the joint meeting of the Boards of Health and Commerce Boards for the purpose of discussing and promoting sanitary reforms and legislation, which is to be held in this Board of Trade auditorium at 7:30 o'clock tonight. Dr. Hickman and Dr. Schaffter of the Bureau of Animal Industry at Washington will discuss the subject of better sanitation and infectious diseases among stock from a technical and scientific point of view, and Mr. Nichols will discuss the same question along practical lines. You will have an opportunity to hear both sides of this question discussed from a scientfic and practical point of view, an opportunity that you have never had in this city before. I want all of you who are interested along these lines to get out and hear them. I hope you will fill this hall.

President Scott: Tomorrow morning we will continue the sessions of the State Farmers' Institute. You are all requested to be here at that time.

Adjourned accordingly.

WEDNESDAY MORNING SESSION.

The convention met pursuant to adjournment, President Farnsworth in the chair.

President Farnsworth: We will take up the morning programme now. It is just a few minutes past the hour. We wanted as good attendance as we could have this morning, as we have a very important subject to start off with. We will first have some music by the ladies' quartette.

Music: The Cecelian Ladies' Quartette.

President Farnsworth: We have with us this morning a gentleman who has been possibly not a pioneer in the institute work, but who has put in a great many years at that work. He has trained many of the young folks that have started out in this work. Sometimes he has had rather poor material to work on; I know of one such case at least. He will talk to us a short time this morning on the subject of "Growing Young Cattle on High Priced Land." As he is in close touch with the agricultural interests of the state, I am satisfied that he can tell us something that will be of advantage to us all. I take pleasure in introducing one of the leaders in our agricultural work, Mr. John Begg, Putnam County (applause); he needs no further introduction. You are acquainted with him better than I am myself.

"GROWING YOUNG CATTLE ON HIGH PRICED LAND."

BY JOHN BEGG, COLUMBUS GROVE, O.

When I was invited to deliver an address before this assembly of my associates, the farmers of the great commonwealth of Ohio, I looked over my list and selected a topic which I believe, while it is one of the most important, is alson one of the most unpopular subjects that could be talked about before a Farmers' Institute at this time; namely, that of growing stock cattle, or young cattle, on high priced land. The original title was, "Will it pay?" If it does not pay, my friends, we do not want to engage in that business. We all want to work along farming lines in such a way as to receive a profit in our business and from our investment; but we must remember in determining what are profitable farming products, that there are two kinds of profit coming from farm operations. One may be called a direct profit, such as the growing of wheat to be sold at the elevator or the mill; then there is an indirect profit, such as we obtain from the straw and also by using the wheat crop as a nurse crop for growing grass. So it may be said in connection with my topic today that it is not for the direct profit alone that we figure on growing stock cattle on high priced land, but it is as much almost for the indirect profit that we receive from this important business on the farm.

Let me speak for a few minutes, my friends, if you please, upon the indirect profits that arise from cattle. Before I do that I want to call your attention to the fluctuations in the cattle business so far as price is concerned. I want to say that I believe no other live stock suffers so much from the rise and fall of prices with most farmers in their practice as is the case in the cattle business. Why, we hear all over the farms today that it does not pay to grow calves, that it does not pay to grow cattle, that our land has advanced from fifty to sixty dollars an acre above what it was a third of a century ago, until it now stands around one hundred dollars an acre; in some places going above that. There are very few places in the corn growing sections where we could buy land below that.

We find then that the impression has taken hold of the farmer that cattle cannot be grown on high priced land and a profit realized. Now, what is it that makes land valuable in this corn growing belt or in the forage growing belt? Why, my friends, it is the productiveness of the soil; it is the productiveness of these farms that have made them worth one hundred to one hundred and twenty-five dollars an acre. That is what has given them their high value in the real estate markets of the country. Anything that tends to lower the value or decrease the amount of the products of the farm will lower the value of the farming lands in the real estate markets of the country; so that if you pursue any system of farming that will cause your soil to deteriorate in productivity, to that extent you will depreciate it in value. This being the case, it gives me encouragement to call your attention to the fact that in the corn growing sections of our country there is no element, I believe I am safe in saying, that gives you such a large indirect profit, as well as reasonable direct profit, as does that of calves when grown upon the farm. How is this? Our soil is composed of certain elements of which the three principal ones are known as nitrogen, phosphoric acid and potash. You have to have also another ingredient in the soil in order to make it productive, namely, humus. What is humus? It is composed of decomposed organic matter, such as the fodder in the corn field and the straw in the wheat field. It results from the hay consumed on the meadow and other forage. Without this important element in soil composition called humus, you cannot grow crops. Humus is that element of the soil that gives it color and lightness. It aerates it. It makes it easy for the air and water to get in through it. But there is another important element, my friends, one which is being decreased in quantity all over this country now, in the most productive sections as well as those which are not so productive. What is that? Animal moisture. With this element and with plenty of humus in your soil you can grow crops.

Now this humus content may be exhausted. I am not a scientist, as you know; I am a practical farmer, and I am going to talk to practical farmers in a practical way; but we have men who are known as scientists, who make a careful study and analysis of soils, and they have found out how this or that substance may be depleted or used up in the soil. Every time you get a crop of corn off an acre of your land, in your rich soil you use up fifteen hundred pounds, or three-fourths of a ton of humus. Scientific analysis has revealed the fact that when you grow a crop of wheat you use up eighteen hundred pounds, or nearly a ton, of this all-important element in your soil; and the capacity of this soil to retain moisture and become aerated is reduced in proportion; and the soil harder to cultivate; and these things you will realize as true upon my calling them to your attention, if you have not done so before.

Now, another important element in furnishing humus and changing the chemical composition of the soil and breaking down the mineral elements of plant food in it necessary for the growth of forage crops, leguminous crops as well as other grass crops, is produced by pasturing the land. That we were taught from boyhood by our fathers. We know that without scientific research. Our fathers told us that we must rest the land if we wanted to improve its mechanical composition and make it more rich, by pasturing it with stock. What does that do? It returns to the soil seventy-five per cent. of the forage grown on the farm. Not only that this element of fertility is returned to the soil from the food consumed, but our scientists tell us that the roots striking down into the ground are constantly breaking down the mineral elements of plant food and making the soil more productive.

Let me call your attention to one or two further things, of which no doubt you are aware, in order to refresh your memory and cause you to think about them and see the truth of them. The great increase of the city population has caused a greater demand for our grain and forage products, consequently the price of those products has gone up, and more of them are being taken off the farms every day, and the fodder, instead of being consumed where it is grown as in years gone by, is being taken to the cities and fed to animals there. It is being baled and shipped away in constantly increasing quantities. There is not a farmer within the sound of my voice that will deny my statement when I tell you that there are fewer cattle on the farms of Ohio today in proportion to the number of acres of tillable pasture land than there ever was before, except possibly during one period. So far as my statistics show, I find that in 1881 there were one million thirty-eight thousand four hundred and eighty-six head of stock cattle exclusive of milch cows in the State of Ohio. During the fifteen years following that year you know what was going on on the farms; we were clearing new ground every day, we were putting more land under cultivation, taking it from forest areas. Consequently in that period of a decade and a half we must have very materially increased the number of acres given to grass, corn and hay. What happened? Instead of increasing the number of cattle in Ohio, they decreased in that fifteen years to six hundred and thirty-one thousand four hundred and eighty-six, a decline in number of forty per cent. in that fifteen years, with an increase in the amount of forage crops and a greater draft upon your soil.

I say then that there is no industry that is so closely identified with the future welfare of the farmer as that of growing stock. I do not want to be misunderstood, my friends, in this. I do not mean to say that if I lived upon a farm near the city of Columbus that I would not grow vegetables to supply the market; I do not mean to say that, but I mean away from the centers of population, out in the country. I live in a corn growing section near a town of two thousand inhabitants, where we formerly fed hundreds of cattle during the winter time. I do not know of a single car load within a radius of four miles from my home on feed this winter. What is the result? People are offering to sell their forage products, and the result of this method of treatment going on all over the State has been that a new industry has sprung up. In 1900 I believe that the farmers of Ohio paid out three million dollars in cash for commercial fertilizers. So I say, my friends, that with the abnormal conditions existing in the cattle business we are suffering from abnormal conditions in soil fertility. One must accompany the other.

Without dwelling longer upon that, I want to call your attention now to the raising of cattle and show whether it can be done to get any direct profit out of it, as well as indirect; and in the start I want to call your attention to one thing: You cannot take forage crops and grow them and get as large an amount of cash from the same number of acres of land as Dr. Chamberlain will from his orchard; but did you ever stop to think that the doctor had to put in a great many years of time and labor before he got anything out of that orchard? You cannot get possibly as large an income as my honored friend Brother Brigham can from growing truck, such as cabbage, or something of that sort, but he will tell you that he has to pay out three-fourths of the gross receipts for labor expended. Remember, that the man who raises cattle on his farm has solved the labor problem more nearly than any other man unless it is the sheep man, because I believe that sheep and cattle require less labor to raise and get the same income from than almost anything of which I have any knowledge. When you talk about your large incomes, my friends, from your various farm products as well as from intensive culture, you must remember that you must take into consideration the value of the labor involved in order to secure these results.

In the first place, if I wanted to raise cattle—and I do raise them when I am engaged in farming, always have and always will until I am convinced by actual experience that it does not pay—I want to say that you must select the kind of cattle that will bring you a maximum profit at minimum cost of production. This is the universal rule of manufacturing industries, and you must remember that a calf is nothing more or less than a living machine which you are going to use on your farm to manufacture the raw product of fodder, the raw product of hay, the raw product of corn, and the raw product of grass as grown upon the field, into the finished product of flesh for feeding the human family. You want to select such animals as will give you the maximum amount of product at the minimum cost of producing it; and, therefore, you want an animal that is constructed along beef lines or for beef purposes. Forty years ago the cattle feeders of Franklin County, if you please, and Franklin County was full of them, when they went out to stock up their feed lots in the fall of the year, as they did in those days, would go to their neighbors and buy two or three head here, five or six there, and so on. You cannot buy beef stock in your own locality so easily because of the indiscriminate mixing up of dairy breeds with beef breeds. You have got to buy cattle now that are part dairy breed and part beef breed, and the discouraging fact is that no dairy animal will pay to raise for beef purposes. This is simply according to the laws of nature. It cannot be done. If you feed a Jersey steer, for instance, or one of the other milk breeds, you can, in some of them, as in the case of a Holstein, get a large animal, but he will be rough and have a great deal of bone, out of all proportion to the flesh, and the butcher will discriminate against him when the animal goes to the block. So then, my friends, you cannot grow these. If you do feed one of the milk breeds, following nature, it will turn the food that it eats into tallow, the cheapest product in the carcass; and when you come to get that animal cut up on the block by the expert butcher, he will discriminate against him; so that while you may have gotten a reasonable amount of growth you will only get two or three cents a pound for it. Growing that kind of cattle does not pay. So the thing to do is to buy a cow that will produce a good calf and give you a good flow of milk. I am sorry to say that that breed of cows is not so plentiful in the country now as it was thirty or forty years ago, but I have found those that would make as much butter almost as the average dairy cow, and at the same time produce a big lusty steer calf that would bring from forty to fifty-five dollars at two years old with very little grain in their feed.

Now then, after you have got the calf, how are you to grow it? I want to be as brief as is consistent with the discussion on this topic. There are two methods that can be adopted; first, you can grow them by letting them run with their mother. Now up jumps somebody and says: "You cannot tell me that you can lose a crop for an entire year for the sake of growing one calf." Well, sometimes that is true; but I am not sure that it is always true. I have in my mind men who are practical and successful farmers who are getting herds of shorthorn cattle and are growing their own cows and letting their calves run with the cows and making money, as is shown by every indication of thrift and prosperity around their homes and farms. But to be more specific, my friends, even granting that the day is coming when with land at one hundred dollars an acre you cannot afford to keep a cow a year for the growth of one calf, what then? By a little ingenuity and a little work you can have her take care of another calf. The ordinary milch cow will give of her milk enough to keep two calves in good condition until you can begin to feed them on more concentrated substance. This has been and can be done with profit. You can feed the calf a little corn and oats, or corn meal. Corn and oats is better. I never like to grind feed for calves, and I do not do it, because they will grind it up and be glad of the job, and do it for nothing. Their digestive organs are so constructed that there will be absolutely no waste from feeding them the whole grain when they are young. By placing it within easy reach they will learn to eat it at a very early age. They will begin to nibble at the corn and oats probably when they are two or three weeks or a month old. What happens? They soon begin to crave solid food. By letting two calves run with the cow, or letting her to them night and morning, it would involve slightly increased labor; but if by doing so you can raise two calves until they are five months old, they will then be far enough advanced that they can eat more concentrated food and rely on that instead of the mother. Thus you will get two calves instead of one; not so fat, not so large, but I believe you will make more out of those two machines than you would out of one that was a little larger at that time. Now then, the milk from that cow at the end of the five months' milking period will be, of course, somewhat thin, but if you want you can buy another calf or you can milk the cow the balance of the time, although that is not so advisable in general. You can, though, go and hunt up another calf, for there is always somebdoy who has calves to sell who devote their attention to other lines of farming. If you can get one of those calves—and I have found it not altogether impossible—you can put that third calf to that cow and in that way produce another steer calf that will be ready to consume your forage, your hay, your straw, your fodder and your rough feed grown on the farm, and your grass the next summer. If I was going to raise calves and make a business of it, I would prefer their being dropped in the fall. Why? Because the calves for the first few months have to really depend upon the nourishment obtained from the cow. It requires so many months of extra care in order to get the calf ready to take care of itself. If you start in the fall then the care is given to it in the winter time, when you have to do it anyhow. By spring that calf will want nothing better, there is nothing better—I do not care what people say—there is nothing better and cheaper than the grass that can be grown upon the farms of Ohio. If you have bluegrass, all right. If not, you can have mixed grass, some of the various clovers or timothy. This, my friends, will keep your calf at normal cost during the summer and will produce the most rapid growth of any feed that I ever tried. Now then, there is another way, my friends, by raising calves on the skimmed milk process. We know that after the first ten days or two weeks of the calf's life you can change that calf to skimmed milk; you can do it better, you people who have cows enough to justify it, by purchasing a separator and by its aid prepare the skimmed milk to feed your calves, having abstracted nothing but the butter fat.

I think it should be a little encouragement not only to grow calves, but it would be an encouragement to the man who has four or five cows to buy a separator, in order to get his milk in first-class condition for his young stock. You can feed a calf on skimmed milk at very little cost by adding a little ground feed which has first been scalded. I would never feed any corn meal. Corn is a good thing to be fed with milk because corn has a carbo-hydrate or food producing element in it which balances the protein in the milk. You will promote its growth if you teach that calf to eat some solid food other than milk. I have seen calves that were grown that way, fed with good skimmed milk that got nearly as sleek and attained nearly as good growth as they would have done if they would have been following their mother.

And now what happens? You have got your calf upon your farm, you have reduced the liability or the temptation to sell your forage crop and then you have got those nice thrifty calves, and you can let a little more of your land lie in grass; and the more you let lie in grass, the larger the crop; the more sod you have the better it will break up for your corn, oats, wheat and other crops grown on the farm; the larger yield you will get because the crops will profit by the decayed vegetable matter, as was indicated in the first part of my address.

I have a neighbor who lives near me. He does not raise many cattle. One year he bought a calf at seven or eight months old and paid twenty-five dollars for it; and I want to tell you that the man who sold it made money on that calf by keeping it with the cow and getting twenty-five dollars for it. Now then, my neighbor took that calf; he thought he would try an experiment, he would put it on concentrated food and on grass. He gave it about all it could eat until it was twenty-two months old and weighed one thousand three hundred and eighty-five pounds, when he sold it at six cents a pound, bringing him sixty dollars a year or five dollars a month. That was exceptional feeding. My friends, the average stockman does not feed them on concentrated food.

I know a man who weighs his cattle every day, a young man starting out on the farm. He does not want to do anything that will not bring him money. He weighed his steers and weighed out his feed. One of them weighed one thousand one hundred and fifty pounds at twenty-six months. That steer had not eaten ten bushels of corn during its life. Another, one year old, weighed nine hundred and fifty pounds; another eight hundred and fifty pounds. That was on the average, with the ordinary care that they get, on rough feed, in the winter time, with a little grain. With the proper care you can keep them growing right along; there will be no stunted period in that calf's history. It will not do to let them lose in flesh, because it will take effort to bring it back again. An average yearling will weigh between six and eight hundred pounds. If you go to Chicago and buy cattle at the yards, if you go into the stock department you will find that the yearlings will run about six, seven or eight hundred pounds.

If we would grow these cattle we would get the direct profit that comes from the sale of the calf, and an indirect profit, as I stated, in the improved condition of our soil. I want to tell you some of my experience. I do not say very much about my own experiences only to prove what I am saying on general principles. A few years ago I bought twelve or fifteen steers—I have forgotten the exact number now—paying a certain price for them. I put them on feed. I put them in the wagon and brought them home on the 15th of April, and weighed them up so that I would know what I was doing. I put them on corn and rough fodder until the pasture season came around, and then I weighed them out again, turned them out on a little woods pasture of about six or seven acres. The pasture was clover and timothy, which was in good shape. They had all the shade they wanted to make them comfortable in hot weather. They had all the clear running water to satisfy their wants for drink, and they had all the succulent grass they wanted as nourishment to cause them to grow in flesh. Now, what happened? Counting the price per acre that I paid for the woods pasture, and counting my own woods pasture at the same price that I paid my neighbor for the adjoining lot, and allowing for the cattle that I had sold off the first part of July or the first part of August, before the flies got bad, they had brought me between six and seven dollars an acre, which was between six and seven per cent. on the investment. If you can clear that on your investment you are doing pretty well up to that time of year. Then you know I had ninety per cent., or we will say seventy-five per cent., of the fertility that was grown on that seven acres back on the land that produced it without ever handling or scattering feed for those cattle; in other words, they did their own feeding and they did their own distribution of the fertilizer. Not only that, but while they were eating that grass they were bringing about conditions that would bring about the solution of the mineral elements of plant food in the soil. I could have taken that seven acres of grass and got a large increase of wheat or corn. Even now in the corn growing section I believe the time has come when we are making a mistake if we do not grow our cattle. We are selling our straw and are depriving ourselves of the valuable element, the humus which is so essential to crop production.

In conclusion, let me call your attention to the fact that I have learned by careful investigation that the man that grows his cattle on the farm and feeds his cattle is never heard complaining about his soil deteriorating in productivity—or very seldom; and if that be the case it seems to me that even if we realize less direct profit from our investment we are still up with the other gentleman who keeps his land reduced by robbing it of its natural fertilizer, unless he brings barn manure from the city in order to restore the soil and keep it up to a high state of cultivation.

I leave the subject to your consideration and sincerely thank you for your appreciative attention.

Discussion.

President Farnsworth: Gentlemen, I see that you have appreciated the address of Mr. Begg. While we have another subject before us this morning, we will take a little time for the discussion of this, say fifteen minutes, and then take up the other question. Please be brief and make your points promptly, for time is precious. We are here to learn all we can.

Mr. Dunlap, Ross County: Mr. Begg says that he can raise calves, which I do not doubt; he says that he can raise two or three calves if they are all of the male persuasion. I would like to know what he will do with his females. We can not raise heifer calves and sell them to butchers for two or three cents a pound, keep a cow a year and then only raise three calves and sell them at that price. If all our calves were male calves we could probably do so. Another thing, I do not agree with him when he says that he prefers to have calves come in the fall of the year. In that case you would have two animals to take care of through the winter instead of one, and we would have to furnish shelter and feed to both the cow and calf; whereas, if the calves come in the spring, by the next fall the calf can take care of itself to a considerable extent, and the cow also, and we will not need to give them as much care as if we had a cow with a young calf in the winter time. Another thing, I do not agree with him when he says that if a farmer has four or five cows he can afford to keep a separator and raise the calves from the milk after it is separated. That would be all right if a separator did not cost so much money, and if it did not take so much time to clean a separator after it had been used. You can not afford to keep a separator for four or five cows on account of the time and trouble it takes to clean the separator if used twice a day. For that reason I do not think a person can afford to keep a separator unless he has a number of cows.

Mr. Hanna, Wood County: One thing which struck me in Mr. Begg's talk, which I would like a little information on, is this: he tells us that in his locality they have not been feeding cattle on those farms for years, and they certainly have fertility in the soil. I am a new beginner at feeding, have been feeding only five or six years. Our object in feeding is to keep up our soil and grow a better crop. I want to know why people in his section have ceased to feed and build up their soil.

Mr. Begg: I said the reason was that they could not do it and make a profit out of it. I refer to the condition of the corn this year, and the prospects of high priced corn and the uncertainty in the cattle market which makes an investment in cattle doubtful. So, I say, there are very few cattle on feed in my section of the country this year. Come to think of it, there is a gentleman that is feeding, not in my neighborhood. This is in answer to the other brother. I want to say that the average cattle man when he goes out to buy the other two calves, besides the one that he raised, wants to buy heifer calves. I do not think that Mr. Dunlap would do any differently himself. If his cow has a heifer calf he will veal that calf and get a steer calf. As to the separator, I do not know only what I am told about separators. I only keep one or two cows and we do not think a separator would pay for them; but if I were keeping four or five cows, from what I have seen of separators and heard from men in the immediate vicinity who are practical business men, I would buy a separator and get the warm milk for growing pigs or growing calves. I believe it would pay financially. (Applause.)

Mr. Reynolds: I am glad to hear this discussion. I do not know how many people are here, but counting their time at twenty cents an hour, five or ten men in the audience will get the worth of their money in listening to this talk. There was one thought you could see all through the address, that the gentleman loves his stock. He did not bring that out and say so, but you could see that. I was at his place many years ago, and I could see that at that time; and that is the thought that I want to call out, that you must love your stock. A man near the Franklin County line telephoned me about three months ago and said, "I want to ask you what you would do for lump jaw," and then he told me about a lump on a steer's face about as big as a five cent loaf of bread. I said, "When did you see that lump first?" He said, "I noticed it about a week ago, when it was pretty near as big as it is now." I said, "I will tell you what to do, you shoot that steer; then you put that down as experience." I think a man that would let a lump grow like that on an animal ought to have some severe punishment meted out to him; but I told him what to try. I have seen him since and he said the steer was going to die. Let us carry away this thought from Mr. Begg's talk, that no man ought to have any cattle or stock unless he loves them. I love every one of my animals and every one of them is a friend of mine. When I send them to slaughter it makes me sorry. My whole family are sorry whenever an animal is shipped away. I have been in every township in this state, and it makes me heartsick when I see animals cared for in the way that many are. Suppose you had a barrel that you wanted to fill with rain water. Your object would be to get it full. Now if there was a hole in the bottom the faster you pumped the water in the sooner you would get it full. Make your animals happy. Treat them so that when you drive in the field with a skeleton cart that everyone of them will try to get inside of it with you. I do not want any dogs; I kill every dog that comes on the place. I was paid $215.00 out of the Licking County treasury for the sheep that they killed. They had to be killed because their mouths were torn so by the dogs. Let us take this lesson to heart; that you can read between the lines of Mr. Begg's address, to treat every animal kindly that we have. (Applause.)

President Farnsworth: It not only makes your heart sorry, it makes your pocket book sorry as well as your heart to keep animals the way some do. Is there any further discussion?

Mr. Nelson, Highland County: I just want to say a word that I think ought to be said in favor of the heifer calf. Mr. Begg didn't seem to take account of the fact that half of the steers would be heifers. I will just say that in the past three years I have had 200 head of calves, and the bunch that I made the most money on, half of them were heifers. There is getting to be not so much differene between the selling price of the heifers and the steers now as there used to be. I would not hit all the heifers on the head. I have just bought them right along and let them go right with the steers and they turned out all right. (Applause.)

Mr. Seidel, Crawford County: I would like to ask Mr. Begg at what age he tries to have cattle ready for the market.

Mr. Begg: Between two and three years old. Past two years old.

Mr. Moore: I would like to ask Mr. Begg, if he is not going to deal in heifer calves, where he is going to get his cows to raise more calves with.

Mr. Begg: I am not raising cows, I am raising steers for profit. If I were a dairyman I would raise my own cows, because you have to hunt for a good cow like you have to hunt for a wife; you can not always buy them.

Mr. Hill, Fairfield County: I do not mean to explode a bomb in the midst of this discussion, and I appreciate the fact that the argument of Mr. Begg as to keeping up the fertility of the soil is good and all that, and it must be done. I also wish to state that I never sold a bushel of corn or a ton of hay or straw in my life upon the farm. I live right at the mouth of the mining fields in Fairfield County, but is it not a fact that there are very few bullocks that go on the block that somebody does not lose money on at some place along the line from the time of their birth until they go on the block?

Mr. Begg: It seems to me that that argument would be far-fetched. I am not doing business for the butcher, nor for the sharper, nor for anybody else. I have enough to do to take care of myself. If I can take a bullock and make money out of him while he is on my farm I have fulfilled my duty to myself and my posterity, and done it honestly. You might just as well say the same about horses. Because a man makes a bad bargain in a horse trade that is no reason why there is no money in raising horses. I lost $40 on a horse once; the other fellow made it. That is no argument at all in the cattle business. I want to say this only proves the statement true that I made at the opening of my address—that this was an unpopular subject. People do not believe what I say about this business, but if you will carefully take it home and investigate it you will find that I have not overdrawn it from a practical standpoint. (Applause.)

Mr. Hill, Fairfield County: In answer to that gentleman, I wish to say that I have been feeding cattle quite a while, and expect to continue it, but owing to the fluctuations in the market it is a hard game to go up against. I think that is the experience of a great many of our cattle feeders. Of course, if they buy them right they can make a market price and sometimes a little profit—if they buy them right. But nothing has been said about buying right, but simply the matter of productiveness. I think that is one of the features that has been lost sight of in the whole discussion.

Dr. Chamberlain: I want to call your attention to the fact that Brother Begg understated the argument for humus. Men who talk of humus always understate it. It is true that humus helps to aerate the soil; it is true that humus helps to hold the moisture where it may be used; it is also true that humus contains large portions of the three essential elements of fertility, viz., nitrogen, phosphoric acid and potash. I never yet heard a man who was talking about humus who gave it credit for its full benefits. It returns to the soil what came from the soil in the form of nitrogen, phosphoric acid and potash. I wish those who argue for humus would give the whole of the argument, and not just a part of it.

Mr. Bradfute: I was not fortunate enough to hear all of Mr.

Begg's remarks, but I am sure they were all good. From what I gained from the trend of the discussion I can infer some things he must have said, and some of the things he said must have gone home. It seems rather strange to me that in this country anybody should take the stand that there is nothing made in growing beef cattle. I simply want to show you, my friends. Take the man who has been growing beef cattle for not only one generation, but two or three generatins, and I will show you a farm that has been getting better all the time; I will show you a man whose farm has been getting larger, who has been buying land from the other fellows who have not been growing beef cattle and whose farms have been getting poorer all the time. Beef cattle men are not breaking up in this country very fast. They own the good farms in good communities almost invariably, and in the very richest parts of this state. They are the men who are succeeding.

Another thing, as to the young cattle business, too many men go into the cattle business with the impression that they can buy poor cattle and make good ones out of them; there is the trouble. (Applause.) If you will buy good stock, give them good care, and love your cattle as the gentleman said over there, I promise you that you will have something to show for it. (Applause.) You will have something to sell that somebody wants to buy at a good price; there will be a profit to everybody who handles that kind of cattle. (Applause.)

President Farnsworth: I dislike to cut off this discussion, but I believe that we have taken all the time that we are allowed. There is another subject. After we have had that, and a little music, discussion will again be in order, and then we can take this up again if desired. I am satisfied that this discussion has aroused a good deal of thinking, and that is what it is for. Think it out now. We will now call for music by by the quartette.

Music: The Cecelian Ladies' Quartette.

The music was enthusiastically applauded, and the audience seemed to have an appetite for more.

President Farnsworth: We all enjoy music, but we have more important work, we are here to learn all we can. We have with us a gentleman from the Ohio Experiment Station at Wooster. We are always glad to hear of their work, which is carried on for our benefit throughout the state. We will call on the representative of the station, Mr. E. B. Forbes, who will talk to us on "The Function of the Mineral Elements in Nutrition."

"THE FUNCTIONS OF MINERAL ELEMENTS IN NUTRITION."

If one were to take any part of an animal's body and burn it up completely, by far the larger part would go off in smoke, but a very small portion would remain behind as ash. This ash contains most of what we call the mineral constituents of the body. It is very slight in amount and is so easily blown away that it might seem fair to neglect this trifle and to give our attention to the composition of the much larger organic part which burns; but if animals are low in ash, so also are our foodstuffs, and when we look carefully into the functions of the various constituents of the living animal we find that no vital action takes place without involving in an essential way, these mineral elements which go to make up the ash.

We are interested in this matter from two practical points of view. In the first place, the ash contains the more important elements of soil fertility, and in the second, our modern methods of preparation of foodstuffs, both for our own use and for stock feeding, often separate those parts which are rich in mineral elements from the remainder of the food and neither of the parts is as nearly a complete and perfect food as was the original natural product.

For instance, white flour contains only one-fourth as much iron as does wheat; gluten meal contains only about half as much ash as does corn; cracked corn, hominy and bolted corn meal contain only a fifth as much ash as the corn from which they are made; the rice that we eat contains only about one-third as much iron as is in the rice by-products fed to stock; milk albumen, made from skim milk and now largely used by poultrymen, is almost pure protein, but is very low in ash, while another milk product prepared from whey and sold for poultry food, contains 23 per cent. of ash; dried blood feeds contain about 87 per cent. of protein, but only three per cent. of ash, while digester tankage, with 60 per cent. of protein, contains 22 per cent. of ash.

The intelligent use of foodstuffs, varying so conspicuously in the relation of ash to protein, requires that we understand the functions of the mineral nutrients. If it was ever true that in our natural choice of food we could not fail to get an abundance of those mineral nutrients which the body needs, it ceased to be true with the advent of modern processes of milling and preparation of foodstuffs.

The use of Wolff's feeding standards, which consider only the organic part of our foodstuffs, has, during the last generation, led us away from an appreciation of the importance of the mineral nutrients, so that now we are having to go back to the days of our fathers to rediscover what they used to know about this subject. This is all our fault, however, and not Wolff's, for in addition to his feeding standards he has also given us the only comprehensive work in existence on ash analyses of foodstuffs. This was published 28 years ago.

Modern tendencies in stock farming give this subject a special importance that it had not in times past. The forced feeding of our early maturing meat animals and the selective improvement of our poultry and our dairy cows for greater productive capacity call for a higher percentage of the mineral nutrients in the foodstuffs than was necessary in the old days of less intense production. The requirement of mineral nutrients for mere maintenance is slight in amount compared with the requirement for production of flesh, eggs and milk, and hence the more efficient the producer the higher must be the ash content of the food.

Now if this is so important a matter, how is it that we have been getting along so well for so many years more or less in ignorance.

Really, the truth is, we haven't been getting along quite as well as we should. The average farmer lets his hogs run down in size and in bone because he does not know how easy it is to do better. He fails to get maximum growth of bone and muscle in his colts for the same reason. His hens do not lay the eggs that they might nor do his sheep shear the wool that they should. Poor teeth are the rule and anemia is far too common. Nervous collapse is the disease of the age. These troubles all have to do directly with the mineral nutrients and are in large measure both preventable and curable.

Forster, a German physiologist, first proved that animals can live only a few days on food that is practically free from mineral matter and, strangely, that animals will live longer if given no food at all than if given food thus deprived of its mineral nutrients.

Lunin proved that this latter fact was due to poisoning from the sulphuric and phosphoric acids produced by the breaking down of the tissues in the animal's life processes. Normally these acids are neutralized in part by the basic mineral salts contained in the food.

The symptoms shown by animals deprived of salts in the food are loss of appetite, general weakness, a staggering gait, muscular tremors, great irritability, convulsions and finally death.

The mineral salts in the food also have much to do with regulating the process of digestion and excretion. Many of the salts are laxative in character, while some have the opposite effect.

Jordan and Hart, at the New York Station, have recently shown that it is the mineral constituents of wheat bran which make it a laxtive feed; freed from these salts bran is quite constipating. This seems to explain the well-known laxative effect of graham bread and discredits the idea that this action is due to the mechanical character of the food.

Some most interesting work has been done in recent years tending to emphasize the importance of the mineral nutrients by Professor Jacques Loeb, of the University of California. By the use of certain salt solutions he succeeded in fertilizing the eggs of several species of marine animals so that the normal function of the male sexual element was at least partially performed by chemical agencies. Loeb says, regarding the function of the mineral nutrients generally:

"All these phenomena which depend upon the action of muscles, nerves or glands seem to be influenced to a large extent by the salts, and that especially changes in the proportion of sodium, potassium and calcium salts seem to affect their properties and actions." He also teaches that rhythmical contractions, as in the heart, can occur only in salt solutions; that the presence of calcium in the cells is essential to the effective stimulation of the muscles and that the character of the contractions is controlled by the proportion of the sodium, potassium and calcium salts in the surrounding medium; that calcium chloride inhibits the rhythmical contractions produced by sodium chloride and that we owe it to the calcium and magnesium salts in our blood that our skeletal muscles do not contract rhythmically as do our hearts.

The more important mineral nutrients of animals are sodium, potassium, calcium, magnesium, phosphorus, sulphur and iron. In taking up a consideration of their functions let us begin with a clear realization of the fact that we cannot judge of the importance of a nutrient by its amount in the body. The least abundant is sometimes as important as any. This is particularly true of iron, regarding which we must think not in pounds or per cent., but in milligrams and ten thousandths of one per cent.

IRON IN FOODSTUFFS.

Egg yolk	.0075	Cheese	.0015
Beans (dried)	.0067	Wheat flour	.0013
Peas (dried)	.0064	Grapes	.0013
Wheat	.0052	Asparagus	.0012
Almonds	.0047	Potatoes (peeled)	.0012

Spinach	.0038	Corn meal	.0011
Raisins	.0036	Barley meal	.0010
Oatmeal	.0035	Strawberries	.0009
Beef round	.0032	Bananas	.0008
Eggs	.0030	Rice	.0006
Figs	.0030	Tomatoes (peeled)	.0004
Prunes (dried)	.0029	Apples	.0003
Peanuts	.0020	Milk	.00024
Dates	.0018	Oranges	.0002

According to Bunge, there are in the human body about 3.2 grams of iron. This is about one one-hundred-forty-second part of a pound avoirdupois. In spite of its small amount it is a necessary constituent of every living cell. The blood contains about 80 per cent. of the iron of the body and some is also stored up in the liver, spleen and marrow of the bones. It is also found in the black coloring matter of the hair and skin. In general the iron exists in the body firmly united with very complex nitrogenous compounds called nucleoproteids.

Compounds of iron are essentially involved in the liberation of energy in the body and also in the processes of respiration, secretion, reproduction and growth. Through the affinity which iron has for oxygen, the iron-containing haemoglobin of the red blood corpuscles carries oxygen from the lungs to the tissues where it is to be used. In the tissues this oxygen and the carbohydrate nutrients of the cells are chemically united through the agency of the iron-containing components of the cell proteids. The addition of this oxygen to the carbohydrate nutrients causes them to break down at once into carbon dioxide and water, the constituents from which they were built up in the leaves of the plants. In addition to the production of carbon dioxide and water there is liberated the energy which was used in the green leaves in binding together these components of the carbohydrates. This energy came, of course, from the sun. When liberated in the animal cell it is manifest in heat and in the various movements and processes which constitute life. Hence we see that iron is involved in the basic reaction of living tissue, the liberation of energy.

In considering sources of iron in the food we naturally turn to the first food that the little animal gets—its mother's milk. We are in the habit of considering that milk is a perfect food, and so it is for some purposes, but not by any means for all, because it is very poor in iron. Nature stores up iron in the body of the unborn mammal in anticipation of the poverty of milk in this essential nutrient. During the whole of the suckling period the little animal is drawing upon this reserve and lowering the per cent. of iron in its body. If a child is kept for too long a time on milk alone it will become anemic. This is especially true of infants reared upon artificial foods, which usually contain only one-third or one-half as much iron as does human milk.

The foods that are our best sources of iron for human beings are vegetables and fruits generally, and cereal preparations such as contain the germs and the outer seed-coats of the grains.

Our foods richest in iron are in the order named: egg yolk, dried beans and peas, whole wheat foods, spinach, raisins, oatmeal, beef and eggs. Those foods commonly in use which contain the smallest percentage of iron are milk, corn meal, rice and wheat flour. Whole wheat contains four times as much iron as white flour and bran five and one-half times as much.

We have very little evidence as to the comparative availability of iron in these different foods.

Women and children need more iron in their blood than do mature men, since growth, lactation and pregnancy all call for more iron than is needed for mere maintenance. Lactation increases the need for iron to the extent of about one-third the maintenance requirement. Toward the end of the period of gestation the blood is carrying 27 per cent. more oxygen than under usual conditions and this certainly implies an increased amount of iron.

Sherman computes that the reduction in the per cent. of iron in a human infant during the suckling period brings this proportion to that of the normal adult at about the age of one year. Yolk of egg makes ideal food for supplying the additional iron needed at this time. Sherman also comes to the general conclusion that the average adult man needs about 10 milligrams of iron per day in his food. We have no figures as to the daily requirement for growing children, but it must be considerably greater than for the adult. Many physiologists believe that at the time of sexual maturity of female animals there is a withdrawal of some of the iron from the circulation and a storage of this portion in the reproductive organs in anticipation of its need. This would indicate the desirability of unusual attention to the diet at this time.

Dietary studies show that most people get enough iron most of the time, but still on every hand we see anemic people, especially women and children at certain stages of their development. Anemia responds to medication with iron preparations most readily if the iron supplied in the food be liberal in amount.

Calcium, the oxide of which we call lime, is a very abundant constituent of the ash of animals. Three-fourths of the ash of the body is lime. It is found mostly in the bones, but also in considerable quantity in milk and in eggs.

There are a great many localities in the world where the roughage is so poor in lime that it is necessary to administer it as a supplemental feed, particularly in parts of Europe. In this country we have not yet given sufficient attention to the matter to find out how our soils affect the composition of our crops. In Florida, however, considerable quantities of bone flour are fed to live stock to prevent and cure a prevalent bone disease which seems to be caused by a lack of lime in the food.

At the Hawaiian Experiment Station, Shorey found that sisal grown on a coral limestone soil contained 40 per cent. of lime in the ash, while the same species of plant, grown on another soil which was poor in lime, contained only seven per cent. of lime in the ash.

Roughage furnishes most of the lime eaten by our live stock, though it does not always furnish enough. The lime content of roughage varies, as in fact do all of the ash constituents, in amount and relative proportion, one to another, in different localities, in accordance with the amount of soil water and the nature of the substances which it holds in solution.

The importance of lime as a nutrient is indicated by its amount in milk, which contains considerably more lime than a saturated solution of lime in water—cow's milk containing one-fifth of one per cent. and lime water one-eighth of one per cent. Twenty per cent. of the ash of cow's milk is lime, and in 100 pounds of dry matter there are 1.51 pounds of lime. In human milk there is very much less lime, only .243 pounds in 100 pounds of dry matter.

Calcium is an essential constituent of all tissues and plays an essential part in the coagulation of the blood and of the casein of milk.

In human food we find an abundance of lime in milk, eggs, wheat, legumes and in citrous fruits, such as oranges. Corn is phenomenally low in calcium. Leguminous roughage, such as clover and alfalfa hay, contains very much more lime than most plants.

Calcium carbonate and calcium phosphate, bone ash and raw bone meal have all been fed by numerous experimenters to several kinds of animals—cows, calves and pigs particularly. They digest all of these substances and make good use of them, often returning generous profit to pay for the attention. Bone meal is imported into the Hawaiian Islands by the ship-load, to feed to cattle because of the prevailing poverty of the roughage in lime. The Detroit Carbon Company of Michigan used to sell all of the calcium phosphate resulting from its gelatine manufacturing operations in Germany for stock food, but now sells it all here for fertilizing purposes. Among these various bone preparations the one which is used by animals with best results is precipitated calcium phosphate, a mixture of the di and the tri-calcic salts.

From Wood's Therapeutics we quote the following:

"According to Roloff, a herd of cows which had been fed upon hay from a certain meadow were very much out of health and suffered from *fragilitas ossium*. On examination the hay was found to be nearly free from earthly salts, and upon bone meal being given to the cows they recovered their health in four weeks. Haubner also affirms that cattle fed exclusively on potatoes or upon roots very poor in phosphates fail to fatten, become weak, and are apt to suffer from caries, but that if the calcium phosphate be given they rapidly improve; and E. Voit states that rachitis without emaciation can be produced in three or four weeks in young dogs by taking the calcium phosphate out of the food. Boker has found that if calcium phosphate be given to those wet-nurses whose milk contains an abnormally small amount of phosphates, the milk soon becomes rich in earthy salts."

The speaker has fed bone meal to pigs with the effect greatly to strengthen the bones, this being determined by breaking tests. It also increases their density. The increase in size of bones was not so much in length and in diameter of the shaft as at the enlarged porous ends. This tri-calcic phosphate had no apparent effect on the muscular development of the animals.

PHOSPHORUS IN FOODSTUFFS.

	Per cent.		Per cent.
Potatoes	.03	Milk	.09
Hominy	.05	Linseed oilmeal	.80
Rice	.08	Soy beans	.82
Patent flour	.10	Wheat middlings	.90
Gluten meal	.14	Buckwheat mid.	.95
Dried blood	.19	Rice polish	1.17
Oats	.36	Cottonseed meal	1.17
Corn	.31	Wheat bran	1.26
Wheat	.38	Tankage	3.24

Phosphorus is one of the most interesting of the mineral nutrients because of the number of forms in which it occurs in the body and because of the essential connection which it sustains with so many of the bodily structures and processes. It is found most abundantly in bone, nervous tissue and muscle. In bone it occurs mostly in calcium and magnesium phosphate; in muscles most largely as potassium phosphate, and in nerves largely as lecithin and related bodies. Phosphoric acid enters into a considerable number of complex relations with several classes of nitrogenous compounds and is found in every cell of the body. Lecithin is one of the more interesting of these phosphorus compounds. It occurs in every plant and animal cell. Its function is not perfectly understood, but its occurrence in greatest amount wherever intense activity or rapid cell multiplication must be provided for, as in eggs, spermatozoa, glandular cells and nerve centers, seems to indicate its connection with vital oxidation processes. Miescher found 7.47 per cent. of lecithin in spermatozoa and 31.73 per cent. in their extremely motile tails.

LECITHIN IN FOODSTUFFS.

	Per cent.		Per cent.
Egg yolk	9.90	Malt sprouts	.77
Meat meal	3.18	Barley	.74
Kidney	2.65	Wheat	.65
Liver	2.55	Oats	.26
Soy beans	1.83	Bread	.26
Muscle	1.39	White of egg	.20
Brewers' grains	1.30	Corn	.11
Tankage	1.13	Distillers' grains	.10
Germ oilmeal	1.04	Milk (cows')	.08
Linseed oilmeal	.92	Milk (human)	.078
Beans	.81	Rye	.06
Wheat middlings	.74	Bran (wheat)	.03

In this connection it is of interest to note that the lecithin content of the human brain is below normal in melancholia, a type of insanity characterized by great nervous depression, and above normal in epilepsy, a disease in which the sufferer exhibits violent nervous paroxysms.

Lecithin is found among human foods most abundant in yolk of egg, liver, kidney, brains and legumes; among stock foods we find it most abundant in soy beans, tankage, linseed oilmeal and germ oilmeal. It is prepared in a pure state from egg yolk and is used as a medicine in cases of nervous exhaustion and in rachitis (rickets). The prominent place given eggs in the rest-cure treatment of nervous prostration probably has its foundation in the lecithin content of the yolk. Pure lecithin is too expensive to use with live stock, but some of our most profitable foodstuffs are rich in lecithin, and I believe that a knowledge of the lecithin content of foodstuffs will help us to judge of their value for growing stock and for milk and egg production.

In the digestive process the phosphorus of lecithin is absorbed as glycerophosphoric acid. The glycerophosphates have recently come into considerable prominence as phosphorus-carrying drugs.

Lecithin is usually considered to be more useful as a nutrient than either inorganic phosphates or the more stable of the organic phosphorus compounds. Cow's milk and human milk are about equally rich in lecithin, but the cow's milk much the richer in phosphorus. The phosphorus of cow's milk is five per cent. lecithin and of human milk is 30 per cent. lecithin. Its amount in milk is considerably decreased by heating and decreases with the advance in the period of lactation.

Considering phosphorus compounds generally, our best sources of them in human foods are milk, eggs, peas, beans, beef and wheat—particularly its seed coats.

The phosphorus compound of wheat bran is easily soluble in water, and the speaker has found that it has a distinct tendency to encourage muscular growth in swine. This bran extract is very palatable and can be used in growing and fitting pure-bred stock.

In some experimental work conducted by the speaker at the Missouri Experiment Station with hogs, it was found that, provided all other nutrients needed were present, the muscular growth of the hogs was just about in accord with the phosphorus content of the rations, except where the phosphorus was present as bone, as in tankage. Bone makes bone, but cannot be used in building muscle. Another way of stating this result is to say that our common foods do not contain as much phosphorus as is essential to maximum muscular growth. We believe that the secret of growing bone and muscle and nervous tissue lies in a knowledge of the uses of the compounds of phosphorus.

Potassium is found principally in the muscles and in the blood corpuscles.

Fruits, potatoes, vegetables, milk and meat are our principal sources of potassium in the food. The grains are not very rich in potassium, but roughage is quite so, containing more, in fact, than animals need.

Magnesium is found mostly as the phosphate in bones. It is not an abundant constituent of the body and its role is not a conspicuous one. It is not abundant either in milk or eggs.

Sodium is abundant as the chloride and phosphate in the liquids of the body—blood, lymph and milk. Sodium chloride is the source of the chlorine of the hydrochloric acid of the gastric juice. If salt is not fed hydrochloric acid cannot be secreted and digestive disturbance ensues. .

The sodium and potassium bile salts assist in the digestion of the fats, and the alkaline salts of the blood assist in carrying carbon dioxide to the lungs and in neutralizing the sulphuric and phosphoric acids formed in the vital processes.

Sodium chloride is especially necessary in the food of all animals which live mostly on a vegetable diet. This is true the world over with many tribes of men and many species of animals. The reason for this is that vegetable feeders consume large amounts of potassium salts. These react with the sodium chloride of the blood and form other salts which the kidneys quickly eliminate from the blood. Thus the consumption of potassium salt has resulted in the elimination of sodium chloride from the body. This explains why all rations rich in potassium salts require an abundance of common salt. There is a sufficiently large proportion of sodium chloride to potassium salts in a diet of animal food, and carnivorous animals dislike salt if it is added to their food, but all omnivorous and plant feeding animals crave salt and must have it.

The last of the nutrients which we shall consider is sulphur.

Sulphur is an essential constituent of most of the proteids of the body. One item of especial interest in this connection is that among the various nirogenous tissues of the body hair is characterized by an especially high sulphur content. It is also true that among the various families of plants, the *crucifereae* are especially rich in sulphur. Among the common members of this family are cabbage, rape and turnips—plants which the shepherd regards as especially useful in the growth of wool of the best quality. I think that the sulphur in these plants is an important factor in the growth of wool.

We may safely consider, I think, that the sulphur content of our food proteids is sufficient for all the bodily needs except where, as in sheep husbandry, there is a necessity for an unusual amount of sulphur.

Discussion.

Mr. Shafer, Butler County: I would like to ask if we can make those food stuffs, which we produce on the farm, any richer in iron by using a fertilizer that has iron in it. In our neighborhood there is a steel mill, and I would like to know if there is any waste product that can be hauled from that steel mill and placed on our land that would benefit the crop in that way.

Mr. Forbes: We have not done any work at all in this country on that line. It is a problem of immense importance that we frankly admit we do not know anything about. They are just beginning work at the experiment station to determine the effect of soil fertility upon the composition of the crops. Some work was done on that subject years ago in Germany, but it was before our modern methods of analysis were worked out, and the results which were obtained at that time are not now regarded as reliable, and we do not have access to anything on that subject.

Mr. Roudebush: I would ask if the ash of the various substances that we feed to our domestic animals is relatively as easily digested as the organic substance. For instance, in blood you know that fifty per cent. only of the eighty-five per cent. protein is digestible. What about the iron?

Mr. Forbes: If I were to make a general statement in regard to that matter it would be to the effect that the mineral nutrients are not so easily digestible as the organic one; but there are, of course, marked exceptions. The mineral nutrients in wheat bran, for instance, are very easily soluble in water and are very easily digested. Calcium phosphate of bone is digestible only in acids. The acid content of our digestible juices is very salt, so that that compound is not easily digested. If I were to make any general statement, I would say that the mineral nutrients are not so easily digested.

Mr. Roudebush: Then I would take it that the question is a very complex one, and difficult for the average farmer to solve; so probably your advice would be to go on in the same old way.

Mr. Forbes: The same old way is certainly safe as far as demonstrated by long experience. Other things being equal, however, I would certainly give the advantage in the choice of food stuffs to those that contain components of the mineral elements; for instance, you have the choice of cotton seed meal and gluten meal. Gluten feed is a good supplement to corn for market production. Now gluten products are exceedingly low in all the ash constituents. Cotton seed meal is exceedingly high in all of them. Other things being equal, I would give the preference to that one which contained components of mineral nutrients.

Mr. Roudebush: What about blue grass? Does not blue grass stand at the head of the list of forage plants in regard to its ash content?

Mr. Forbes: It contains components of ash constituents. Good blue grass grown on some soils has in it the mineral nutrients that cattle need. I say, some soils; and if those soils are rich in phosphorus, as they are in Kentucky, that blue grass produces the Kentucky horse. If it is poor in phosphorus it will not produce any horses, unless you feed them bone meal in addition. All the soils give a certain characteristic composition of the ash to the plants grown upon them. Just what that characteristic composition is for our Ohio soils I do not know, because we have never done any work along that line.

Mr. Roudebush: That was the point that I wanted to bring out, that the soil very largely determines the ash content of the plant.

Mr. Forbes: It certainly does. A portion of the ash content of plants is essential; a large part is accidental in the sense that the component parts are carried there in solution with the soil water, merely because they are in solution and because the plant has no means of keeping them out. Other nutrients are there because they must be there.

Mr. Nelson, Highland County: I know the time is limited, but it seems to me there is one point that ought to be brought out in regard to this lecture in connection with the farmers' institute. Now feeders will tell you they are all up against a close proposition in feeding cattle, and other animals likewise. In this lecture we are shown that the cheaper feeds, the rougher fodder and the grazing contain the elements that are the most necessary to the growth of the animal. Now I have found that the bulk of the meat product must be made out of something that is cheaper than the highest priced grains and food stuffs; and in this lecture we are shown that these necessary elements are contained in the roughage and the cheaper foods produced on the farm. That goes to show that we must produce meat from those products which are found on the farm—cheaper products.

Mr. Elliott: I would like to ask Mr. Begg a question. He says that you can buy calves of your neighbors. Can your neighbor afford to keep a cow of the beef type and raise calves to sell to you?

Mr. Begg: I had in mind the average farmer who keeps two or three cows for the dairy product for the family, and a good many of them do not keep their calves. I say that a cattle man can buy such calves with profit to himself. The man could not keep a cow just for the purpose of selling that calf; of course, that is a self-evident proposition; but he does not keep the calf.

President Farnsworth: We want to convene promptly this afternoon in order to take up the discussion of the subjects on the program. The address on "Practical Cattle Feeding" will run along the same lines. We also have an address on "Chemical Inspection of Materials," by Professor Lord. We have a feast for the ladies also this afternoon. Mrs. Virginia Meredith will address us on the "Social Life of Young People on the Farm." She has come prepared to give the ladies, and gentlemen as well, a very interesting talk. We are going to touch upon something a little higher than we have touched upon so far; we are going to take up manhood and womanhood, our citizenship, this afternoon.

The chair made some further routine announcements, and the convention took recess until two o'clock p. m.

WEDNESDAY AFTERNOON SESSION.

The convention met pursuant to recess, President Farnsworth in the chair.

After music by the Cecelian Ladies' Quartette, the chair called for the report of the Committee on Nominations, which was submitted and read by its chairman, Mr. Roudebush, as follows:

REPORT OF COMMITTEE ON NOMINATIONS.

To the Ohio State Farmers' Institute:

We, your Committee on Nominations, beg leave to make the following report.

For president, J. Al. Dobie, Wapakoneta, Ohio.

For vice-president, H. P. Miller, Westerville, Ohio.

Respectfully submitted,
LOWELL ROUDEBUSH,
J. S. BRIGHAM,
CHARLES MCINTIRE,
Committee.

On motion, the report of the committee was received and unanimously adopted, and the nominees reported were elected to the respective offices named.

President Farnsworth: Now if the chairman of the Committee on Resolutions is not present, we will take that up later in the session and go on with our programme, so as not to waste any time.

We have with us this afternoon another gentleman who is an expert, and has been so pronounced for a number of years, along the line that he is to talk to us this afternoon, that of practical cattle feeding. We had the growing of the young cattle this morning, and we are going to feed them out this afternoon by a practical man along practical lines.

I take pleasure in introducing to you Mr. N. J. Dunlap, of Kingston, Ohio.

Dr. Brown: We have no doubt that what Mr. Dunlap will have to say will be very interesting, and if he will raise his voice at the start, we will appreciate it very much.

PRACTICAL CATTLE FEEDING.

Having been invited by your worthy secretary to give some of my experiences in cattle feeding, I will try to do so. Although I might not be able to say with the man who had worked on the farm all his life and, in answer to a question, told of his work the first year, I can say in all truth that I have been more or less engaged in grazing and feeding cattle for the last fifty years, except two years, when I was engaged in testing the quality of them after they had been butchered and barreled and sent to us down on the Mississippi river, and known by us as "mule meat" or "salt horse," and produced from about such animals as now sell on our markets at about $1 per 100 pounds.

But there have been great changes in the cattle business during that time in many ways. Fifty years ago we did not have the Shorthorn, Polled Angus, Galloway and Hereford, but just cattle of any and all descriptions, and white, yellow, black, brown and pied, muleys and horned cattle of almost any length of horns you wished to get, and the longer the horns the more valuable, as we used them for powder horns, to carry powder in when we went out to hunt game, and we thought if a cow or steer accidentally got a horn knocked off that it would never do much good afterward.

And then the way we fed surely made good, blue, tough beef. We would winter them on a straw pile, and if not piled very good, with a little fodder, when we felt like hauling it out. This for about three winters, and at four years old, we would sell to some person to "stall feed," as we called it. That was done by having two or three feed lots containing anywhere from ten to one hundred acres, and the number of cattle usually from 100 to 200 in a lot. Then, with three or four yoke of oxen and a big sled or feed wagon, the corn was taken from the shock, hauled into the feed lots and scattered over the ground for the cattle to get it the best they could. Sometimes, when the ground was real soft, the cattle following the wagon would tramp the corn in the mud from sight by the time the load was all off. The two or three lots were arranged so as to keep the cattle in one lot, and let them get what corn they could, and then let the hogs follow them in that lot, while the cattle were turned into another and fed, to be followed by he hogs in the same manner.

I commenced feeding cattle in this way in 1869 and fed until 1873 before I began to use the feed boxes, as we do now, to throw the feed in and let the hogs and cattle all run together. The first feed boxes I owned I bought at a sale of an old cattle feeder who failed during the panic of '73, and I heard remarks made that that was the reason he failed—because he used a too expensive way of feeding, by having boxes to feed his cattle from. What would we think of a man now who would feed cattle in this old-fashioned way?

But in those days we expected, and usually received, quite an advance in price by winter feeding—usually from one to two dollars per hundred more than we could get in the fall from grass.

As to modern cattle feeding and the profits made from it, it is surely a question everyone will have to answer for themselves. For some it is all right; for others, they should let it alone. It depends a great deal on circumstances. For myself, I will try it for a while longer. I am sure I have done as well, all things considered, as those similarly situated, who have sold their grain and hay off of the farm. Some years I have fed out my crop of corn and hay and have not received by one-third to one-half as much as I would have done to have sold it to others, while in other years I have received twice as much as I would have received if I had sold in bulk.

We think cattle feeding is like almost all other farming. Do not get unduly elated if you succeed beyond what you had reason to expect and get a big price for your feed and trouble. Do not stock up heavily, thinking you will do as well all the time in the future. Neither get entirely discouraged if you meet with a market that takes your crop with very little or nothing on the credit side of the ledger. We must realize that if feeding was always a success, everyone would be feeding, and then there would be no grain or hay for other purposes, or, if we all knew the markets of the future, trading would be done about the same as a cash basis is now.

Some feeders sell for future delivery, and I have noticed that they miss the best markets about as often as those who sell when their stock is ready to go. It would be a good plan to sell when you can get a price that pays you well for your crop and work, but there are often circumstances when you may wish to change your plans or your stock should go before the time set for delivery; then you must keep it, often at a loss to you, until the time specified. When the party you sell to has bargained for your stock for more than the market price where they are to go, he is usually very independent, and you must do just as he says to get them off without any trouble. We think it is more satisfactory to sell when ready for market, and use your best judgment as to the time to let them go, and also as to the time to fill their places with other stock. One man's judgment is about as good as another's when it comes to the market of the future.

As to present day feeding, most feeders have a way of their own. Some feed in barns, with water in barn, so they do not get out at any time. Others feed in barn and let them out in lot for exercise and water. Others have open sheds; some have merely a windbreak of some kind on the north and west sides of lot, while there is one occasionally who feeds out in the open field, with nothing but the sky to shelter them. I have tried all these ways, and now feed in lot near barn, where the cattle can go in to have a dry bed and shelter from the storms if they want to; and the barn affords a good shelter and bed for the hogs, which I think is more important than the shelter for the cattle. I have tried feeding in barn, and my cattle did not do as well as when I fed in lot outside and let them run in the barn at will. Some use a heater to warm the water, or rather to keep it from going to ice, but not many of my acquaintance have kept this up for many years in succession, as it is quite a lot of trouble, and I doubt if it pays.

I have been trying summer feeding of corn, and think it has paid me better than winter feeding, and I know it has paid better this year. I sold two carloads of cattle in July at 5½ cents a pound, at a gain of $25 a head for four months' feeding or $6.25 a month. I sold two more carloads about the middle of December at 4.87½ cents, an advance of $29.50 per head, or not quite $3.30 per head a month for keeping them, although about one-half of the nine months of the time of the last lot they had only pasture, so that should be put in at $1.50 per month, which would be $6.75. Take that from the $29.50, would leave $22.75, and that for four and a half months would leave a fraction over $5 per month for the grain fed in that time.

Another important lesson I learned: I had them on a field of 120 acres of young clover of a very rank growth, during August and part of September, and fed them corn—part of the time old corn—and the latter part of the time, new corn fodder and corn cut and hauled out to them. They only gained 82 pounds in 48 days, a gain of 1½ pounds a day. I had them up to a full feed at that time (September 26th), and turned them into the corn field with my hogs, where they ran until October 22nd, a period of 25 days, where they made a gain of 86 pounds, a gain of 3½ pounds a day. I then put my boxes in the same field and fed until the eleventh of December, a period of 48 days, and made a gain of 107 pounds, a gain of 2¼ pounds a day. I cannot account for the difference in gain when they were at large with hogs in the corn field and when they were fed in the boxes, as I saw them almost every day, and know they had all the corn they could eat. It may be that they were nearer finished out, or it may be they did not relish the corn after it had been in shock; or it may be that they did not eat it so well on account of it being "mussed" over by them before it was nearly all eaten up; but in the future I think I shall "hog down," as we term it, a good portion of my crop with cattle and hogs, as I believe that manner of using my corn crop has realized me more profit than any other method I have ever tried.

As to getting a supply of cattle for feeding, for a number of years I have depended upon the Chicago market almost altogether, as it is almost impossible to get an even lot of cattle if you depend on the home supply, and I have not the time to spare to travel over the country for days and weeks to secure a few carloads of cattle. Several times I have left my home on Monday evening at 6 o'clock, been in Chicago at 8 the next morning, left there at 9 in the evening, and arrived home Wednesday morning by 10 o'clock, and bought all the cattle I had money to pay for during that time. Last March my son and self went out, bought four cars of cattle and were gone from Columbus about 33 hours. The cattle cost me $4.32 a hundred pounds in Chicago and a little less than $4.52 at home, counting every cent of expense, and the berth in the sleeper cost us $8, which is not necessary if a person wishes to be economical; and I have been exceedingly fortunate in this purchase of 111 head, as I have not lost one this season, and all but one have done well. I have disposed of 76 head and have the other 35 on feed at present. I expect to sell in February, so as to be ready to lay in a supply for next season, although I bought a car of 800-pound steers in August this year, on account of the abundance of grass, and will try to get them ready for next June market. I try to lay in my supply in the spring or late winter, as I do not like to feed one bunch of steers for six or seven months, and believe it is better for me to buy 800 to 1,000 pound steers, graze them and feed them the following winter.

In cattle feeding there are two very important questions: First, the offal. We always have hogs to follow our cattle, and the profits from them are sometimes more than the profits from the cattle, as hogs do much better for us in winter, when they follow cattle, than when they are fed corn alone, and we usually have more hogs than the offal of the cattle will feed, so feed corn to supply the feed necessary, and think it a good plan, as the fresh bedding each day from the fodder refuse is good for the hogs.

Another important matter connected with cattle feeding is the manure made by feeding out the crops on the farm, and I consider this very important, as land can only be kept in a good state for farm crops by being fed, and as corn is the best and cheapest feed for cattle with us, so manure is the best and cheapest feed for our land. Although we do not depend on that altogether, no other fertilizer has ever given the satisfactory results that manure made on the farm, and a person traveling through the country can usually tell a stock farm from a strictly grain farm by the better crops grown.

All the land I own was badly run down when I came into possession of it, and all that I have had for five years or more is better now than when I began to manage it, and some will produce as much on one acre now as it did on two at the time I began with it, and the principal cause is manure and tile; and the question that I consider now more than any other about my farm is, how can I make more manure, and what is the best plan to get the largest benefits from it. But that is another subject, yet one that is directly connected with cattle feeding, and must be considered when counting profits in this industry.

On looking at the manure pile the other day, where I fed out 20 acres of corn to the cattle that went away on December 11th, I asked myself what could I afford to take for that pile of manure, if I had a purchaser. Could I afford to take forty dollars? My answer was, no, as I think it is worth that for the farm, and if it is, that is $2 an acre for the corn fed out, which should go to the credit side of the cattle, and I can feed out a crop of corn to cattle at a cost of three cents a bushel, where it costs about six to deliver it at the elevator.

As to profits in cattle feeding, I cannot give any very satisfactory figures. The best I can do is to give the cost and receipts for cattle for several years in the following manner: Value of cattle on hand at beginning of the year; cattle bought during the year; value of cattle sold, and value of cattle remaining at the end of the year.

1902:

Number on hand January 1st	129	Value	$ 6,310
Number bought	114	Value	3,928
	243		$10,238
Number sold	104	Value	$ 8,835
Value of cattle on hand at end of year			3,810
			$12,645
Less cost and value first of year			10,238
Income for year			$ 2,407

243 handled during year, including calves.

1903:

Number on hand January 1st	148	Value	$ 5,605
Number bought	85	Value	2,447
	233		$ 8,052
Number sold	118	Value	$ 6,750
Value of cattle on hand			3,810
			$10,560
Less cost			8,052
Income			$ 2,508

233 handled during year.

1904:

Number on hand	134	Value	$3,810
Number bought	74	Value	2,645
	208		$6,455
Number sold	106	Value	$6,331
Value of cattle on hand			3,163
			$9,494
Less cost			6,455
Income			$3,039

208 handled during year.

1905:

Number on hand	145	Value	$ 3,163
Number bought	117	Value	4,036
	262		$ 7,199
Number sold	160	Value	$ 7,934
Value of cattle on hand			2,400
			$10,334
Less cost			7,199
Income			$ 3,135

262 handled during year.

1906:

Number on hand	69	Value	$2,400
Number bought	91	Value	3,296
	160		$5,696
Number sold	114	Value	$7,257
Value of cattle on hand			2,155
			$9,412
Less cost			5,696
Income			$3,712

160 handled during year.

1907:

Number on hand	47	Value	$ 2,155
Number bought	162	Value	5,669
	209		$ 7,824
Number sold	120	Value	$ 7,720
Value of cattle on hand			3,223
			$10,943
Less cost			7,824
Income			$ 3,119

209 handled during year.

You can see from this statement for six years that the fewer cattle I handled the greater the profit; so some of you may think if I had let them alone altogether, the profit would be greater still. In explanation, I will say that when the number was small, the care of them was much better, the quality of the cattle better, and the weight heavier.

As to prices, I have sold good, fat steers since I commenced the business all the way from 3c a pound in the year 1879 up to 6 ½c a pound in the year 1882 —three years after the lowest price. So you may see if I had dropped out of the business in '79, I would have been loser, but by perseverance I made up three years later what I had lost in that year. So I think to succeed we should jog along and not be too highly elated when we make a good hit, or be depressed too much when the bottom drops out of the market. But I will say that my greatest mistakes have been in being overstocked; that is, having more stock on hand than I could care for as it should be done, and if anyone is going to ask me for advice, the first thing I would say is, keep only enough stock so you can keep it growing every day in the year; and when it is ready for market, sell, for if you have to sell cheap, if you wish to stock up you can buy cheap and fit this cheap stock for a better market, as it is a long road that has no turns in it.

One other thing I have learned the last few years: that is, do not value bluegrass pasture too high. It is all right for very early spring pasture or late fall and winter, but I have found that cattle will improve much faster on timothy and clover from June 1st to October 1st than on bluegrass.

I believe I learn something each year about cattle feeding, although when I commenced to feed for myself I thought I was a graduate in the business. Now, the more experience I have, the more I believe there is much for me to learn to get best results from cattle feeding, and I hope to learn some of these things today from those present here today.

Discussion.

President Farnsworth: The subject is open for discussion now. Let us have it discussed rapidly and to the point.

Mr. Rankin: I want to ask Mr. Dunlap, in speaking of the gain in December that he mentioned, what part of the gain was made entirely on grass.

Mr. Dunlap: I can't state that exactly. I could if I had the figures, but not unless I had them. When I turned them in on the clover pasture of 120 acres, I had them on grass from the first of April up to that time. I turned them in on the clover pasture at that time and commenced feeding corn. I only kept a record from that time on till they went away.

Mr. Rankin: You fed them corn while they were on grass?

Mr. Dunlap: Yes, sir, until some time about the first of August.

Mr. Rankin: You fed them from May until August?

Mr. Dunlap: Yes, sir.

Mr. Rankin: These figures would be very satisfactory as to the profits if Mr. Dunlap had noted the value of the feed; but the question is left open as to where the profit is. I would like to have an expression from him as to whether or not he thought, the feed being considered, that, of course, representing largely the gain in the price of the cattle, there was any profit.

Mr. Dunlap: As I stated before I began to read this statement, I did not think it was very satisfactory. Some years I bought a little feed besides what I raised myself, and I did not keep a record of that. That is why I stated at the beginning that it was not very satisfactory. It only shows what I received for the cattle above what I paid for them, and their value at the beginning of the year. That is the only thing I can get at from my books. Some years I bought a little feed besides what I raised on the farm.

Mr. Hanna: I would like to ask Mr. Dunlap how many square feet he calculates for a steer in the stock yard.

Mr. Dunlap: I couldn't say that. I have a feed lot that I can divide into three lots for my cattle, and when the weather is not too bad, I put feed in two lots at a time, so that when there comes a real bad day my men do not have to go out to feed that day. I haven't three-quarters of an acre in all three of the feed lots; I think that is all that is necessary. If you have too large a feed lot the cattle will tramp it up and make it muddy. If you have a small one they keep it pretty well bedded down and do not get in the mud so badly.

Mr. Adams, Pickaway County: Mr. Dunlap in his discourse rather slightingly speaks of what has always been considered, and is today considered, the cattle men's friend, that is, blue grass. Now I would like to ask him how long that blue grass field he spoke about was in blue grass, and whether there was not as much dog fennel and crab grass in it as there was blue grass?

Mr. Dunlap: Well, I supposed that Mr. Adams would have something to say. I can say that the blue grass they ran on is as pretty a piece of blue grass as there is in Ohio. It has been in blue grass for over thirty years; has not had a plow struck in it. It is perfect all over the field. There is a little bit of tansy starting in places where the hogs rooted it up, but I do not suppose there is half an acre of that in the fifty acres.

Mr. Bauman, Pickaway County: I have one experience with stock that was just the reverse of Mr. Dunlap's. I turned in 19 cattle that weighed about 19,000 pounds. When they had eaten 19 acres of corn up, they each weighed within 10 or 15 pounds of the same weight they did when I turned them in. I never had cattle that apparently did better to the eye, and when you would go to observe them, you would think they were doing just first rate. They were behaving nicely and taking to their feed as well as any cattle that I ever had, but they didn't do any good. I did not attribute it to turning them in to the feed lot. It was my first experience. I am glad to hear that his is exactly different. I have a neighbor that had practically the same experience that I had. He had 30 or 40 cattle that he turned in and out with not very good results. He turned his in and out, and I turned mine in and left them. The hogs did well, but the cattle poorly.

Mr. Rankin: There is another question that arose in my mind during the reading of the paper, which is only indirectly connected with the subject; that is, in the cattling and hogging down of corn, what would be the method suggested to get that ground in grass. In our locality we depend almost entirely upon sowing wheat to change the ground from corn to grass. Has any one any suggestion? As far as cattling down corn is concerned, in our part of the country we consider it a success. Of course, there are some conditions in which there might be some waste, but it has been considered a success in our part of the country.

Mr. Dunlap: I will say that I have tried this cattling down of corn for three different seasons. One season I had some sweet corn; I delivered the best of it to the factory, and left the balance to turn cattle in, after I had pulled the best of it off. My cattle gained four pounds a day while on that piece of ground. Next year I turned them in on the common field corn. I have not the figures exactly, but I think that they gained fully as well as they did this year. So I have tried it on three different occasions, and I know they did better than I could have done by hauling grain out to them and feeding them, and it saves the expense of getting corn and hauling it out to the cattle, which makes a difference of three or four cents a bushel on that alone.

A genteman asked about sowing grass. I never tried that, because after I hog my corn down, I think the ground is in about as good shape to put in corn next year as it was that year; so that I have used the same field several years for corn; but I could have gotten a good stand of wheat by taking a disc harrow, if I had wanted to put wheat in that field, because the corn was all off at the time I got my wheat sown in the other fields.

Mr. Begg: Wherever the corn is hogged down, or fed to cattle standing, you can break that up and put it in oats; or if you will in the spring put it in oats or sow it in grass, I believe you are getting the same results as if it had been put in wheat.

A Voice: Do you advocate breaking the ground?

Mr. Dunlap: Not always. I run over it with the disc harrow, cutting the stalks up fine, and then pulverizing the surface in good shape. I would rather have it plowed up with a big plow.

Mr. Gillespie, Butler County: I would like to ask the gentleman over here where he bought his cattle?

Mr. Bauman: I went to Chicago a year ago and got 105 head and brought them home. I selected out the lighter cattle to make the experiment with.

Mr. Begg: Chicago water comes pretty high. We have had some of that down in our neighborhood.

Dr. Chamberlain: It strikes me that the gentleman over here is entitled to a vote of sympathy from this audience.

A Voice: I would like to ask how much land was used in making all those profits, and about how much it was worth per acre?

Mr. Dunlap: That question would be very hard to answer. I did not use all my farm for the purpose of grazing and feeding those cattle. Of course, I have about 1,000 acres down there to work over, but the number of acres that I used in feeding and grazing those cattle I could not state, as I have part of it in pasture and part in grain.

A Voice: What would be a fair valuation for the number of acres that produced that grain from year to year, $2,000 or $3,000?

Mr. Dunlap: I could not say that, I could not tell that; but I have figured up what I made off the farm, in selling grain, hogs, cattle and all; and the cattle profits off the farm are I think about one-third of the profits of the whole farm. I sell wheat, not corn or oats. The amount of wheat and hogs that I sell amounts to about as much as the cattle.

Mr. Begg: How many hogs did you have following your cattle?

Mr. Dunlap: I have thirty-eight head feeding now, and I have 135 hogs after them. I feed them a little corn besides what they get after the cattle. The hogs average about 100; the ordinary sized hogs weigh about 150 to 200 pounds, and we usually have 2 hogs to one steer.

Mr. Rector: The gentleman said he feeds his cattle in boxes sometimes. How does he feed those cattle—once, twice or three times a day? Do you feed them corn and fodder, or crushed corn, and what is your experience there?

Mr. Dunlap: When I first commenced feeding, I usually feed them once a day; put enough in the boxes for a whole day. The last six weeks I usually feed them twice a day, once in the morning and once in the evening. I have fed husked corn once a day several times, but the usual way of doing that is to feed them shocked corn, hauling it out of the field. It saves the expense of husking and cribbing.

Mr. Begg: I will ask whether it would not be as economical and just as profitable to buy your cattle when they are young and grow them until they become profitable to feed, as it is to go to Chicago and buy them when they are feeding? Would you not get just as much profit from a calf for the amount of money invested, feed consumed, and care in attending to them to grow them, as you would to buy them when they are more mature? I would like to ask the gentleman that question, as a practical cattle feeder?

Mr. Dunlap: I do not know. I have never kept figures to answer that question, but so far as my judgment is concerned, I can make more money to buy cattle of from 800 to 1,000 pounds and get them ready for market, than by buying younger cattle. It is rather expensive keeping them through the winter. You have about six months to feed, in our country, and the fodder corn costs us a great deal to get it out and husk it; and if you feed fooder, corn and all, it saves considerable expense. If I expected to feed young cattle, I would expect to winter them on the fodder, and I would either have to husk the corn and sell it, or feed it to the hogs; whereas, if I had cattle enough ready to prepare for market, I could feed them corn, fodder and all. That saves expense. I think I have made more money at that than by getting younger cattle.

Mr. Davis, Preble County: I would like to ask Mr. Dunlap what kind of corn he plants, and how close he plants it? That is the great trouble of feeding shocked corn to cattle. The corn gets too large and the cattle cannot eat it well, a great deal of it. They waste a great deal of it, and you have to depend upon the hogs entirely to clean up the larger ears. Mr. Dunlap also spoke about the differences in feeding corn to cattle, stating that it costs about three cents to haul it from the fields to the cattle, and about six cents to put it in market. We find more difference than that with us.

Mr. Dunlap: I feed common yellow corn. I have no particular name for it. It grows to a pretty good size. I feed it because it is a pretty good corn for young cattle to make a long feed out of. I believe that corn planted pretty thick would be better. When preparing cattle for market I have corn with good, big ears, and if they waste any of it, the hogs get it. If we give them plenty of it, even if the ears are big, they will get enough to fatten on, and they will do better than they will if they have to get so much fodder to get the corn.

Mr. Pontius, Franklin County: It seems like we are at sea. We want to know what these cattle, when sold, bring us for corn per bushel? We want to know whether we are getting 40 cents per bushel when fed to cattle, or 50 cents? We want to know how many acres of grass a steer will consume in pasturing. I have fed cattle a great many years, and I always figured all those things. As to this man back here, raising such big ears, I will tell him to plant his corn a little thicker, and he will get smaller ears and more stalk. This cattle business can be made to work successfully if it is rightly handled, but we want to know what this corn is worth in cattle; that is what I want to know?

Mr. Detweiler, Franklin County: I would like to know how much Mr. Rankin, or anybody else in the house, feeds per head per day, how many pounds of corn they aim to feed an animal weighing 1,000 pounds?

Mr. Gillespie: It seems to me that the most important question is left out, and that is the matter of rise in price from the purchase price to the selling price. I would like to ask the gentleman how much of a rise he has to have from the purchase price to the selling price with six months' feed, or eight months' feed, or whatever period he feeds cattle?

Mr. Dunlap: That is a hard question to answer. I do not think anybody can answer it satisfactorily, because it depends a great deal upon the price of feed. If your corn is worth 40 cents per bushel and cattle worth $5.00, you do not have to have as much advance as you would if the corn was worth 50 cents and the cattle worth $4.00. I usually think on summer feeding we ought to have 50 cents advance from the cost price to the selling price in order to make a fair profit;

and in winter feeding, I think we ought to have more than that, at least $1.00. That depends on what you can do on the hogs. If you depend on the cattle altogether, that would hardly justify it; but the usual manner of feeding, we expect to make about as much on hogs as we do on cattle; so that it depends on the price of the hogs as much as it does on the price of the cattle as to whether it is profitable or not.

Mr. Pontius, Franklin County: When you get $1.00 advance on your cattle, how much a bushel is that on your corn at 70 pounds to the bushel? That is what I want to know.

Mr. Dunlap: I cannot answer that.

Mr. Pontius: Now a practical man ought to be able to answer that, otherwise he is going at it blindly, when he does not know those things. As far as Mr. Detweiler is concerned, I will tell him that a steer will eat from 30 to 40 pounds a day of corn, depending upon the size of the steer. We want to get this thing sifted down.

Mr. Dunlap: I have fed a great many cattle. Can you answer this: How much can you make out of your corn by feeding cattle and selling them at a certain price?

Mr. Pontius: If I buy cattle at four cents and sell at five cents, and feed 60 days, I will make 40 to 50 cents. It is owing to the quality of the cattle. Some cattle will gain better than others.

A Voice: Do you count your gain on your hogs?

Mr. Pontius: I throw them in for taking care of the cattle.

Mr. Dunlap: If I buy cattle at four cents and feed them 60 days, and sell them at five cents, I can make 80 cents on my corn.

Mr. Pontius: Why didn't you say that long ago? (Laughter.)

President Farnsworth: This discussion is very interesting, but I am afraid we are going to take up the time assigned to the other topic.

Mr. Giffin, Van Wert: One question the speaker has not answered, and that is, what evil effects you get in your land by pasturing cattle on the fields? There is some wet weather evidently, and will it not have an injurious effect on your land?

Mr. Dunlap: In the fall of the year I do not think it hurts my land a bit to tramp it, where I have it well tiled; I think I raise as good crops, and sometimes a little better than if it were not tramped.

Mr. Bines: I was very much pleased and very much interested by the gentleman's address. I would like to hear a report every day like that, and would like to have the time to listen to it; but I would like to have my question answered that I asked a few minutes ago. I want to know how much capital he has invested in this work, and then I will know whether there is anything in it or not.

Mr. Dunlap: I answered that question by saying that I could not tell. I run that in with the balance of the farm, and I could not tell how much was invested in the cattle except the figures which I gave.

Mr. Bines: That is no answer.

Mr. Palmer, Knox County: One question has been overlooked, I believe. I am like a few of the others. I would like to get something a little more definite on this question of profits. No doubt there is plenty of money in cattle feeding. I have never done very much of it. Taking it from a practical standpoint, some of our successful cattle feeders seem to be pretty well situated financially, to start on. I don't know how they got it, but it is the case in our neighborhood. I would like to hear from some practical man, who, say, has got $5,000.00 invested in a farm and is $3,000.00 in debt. He has his cattle to buy. I believe he would have to figure those down a little bit closer to know what he is going to get out of his corn at the end of the year. A certain amount of money has to be paid out. We feed sheep up our way, and these winter nights I figure it out. I do not believe I have ever fed a bushel of corn to ewes, but what I could prove by figures a dollar a bushel.

Dr. Brown: Were you breeding ewes after the last crop had been sold?

Mr. Palmer: No, take it any time of the year you want to, raising lambs.

Mr. Moore: He doesn't give us the number of dollars a year. I want to know what per cent. of labor is involved. With us in Coshocton County the labor bill is a problem. We cannot get any one to stand around and look at us for less than $25.00 a month. What per cent. of labor did he pay out, or did he do it all himself?

Mr. Gillespie: Last fall I bought 43 head of cattle at four cents a pound, costing me just about $35.00 a head. I bought them in November. I grazed those cattle till pretty near Christmas, and then fed them fodder with a very little corn. I fed them a little corn until the last half of April. I put those cattle to graze the first of May, and grazed them until the first day of September. In September I sold those cattle at five and one-fourth cents a pound off the grass without any corn. They gained 450 pounds. I did not buy any hogs to put in after them. I made more money than if I had fed them corn. It depends on how you buy your cattle, and how you handle them on the market, after all. I would like to ask Mr. Dunlap, as a practical feeder, if he thinks there is any advantage in feeding them, to have access to a straw rick? If so, does it damage the health of the hogs following?

Mr. Dunlap: When cattle are on a field feeding they will eat a certain amount of straw; if the straw is ricked up and the damp, wet straw can be thrown away from around the straw pile, it is an advantage to the hogs. If the wet straw is allowed to lay around it is a disadvantage to the hogs. If they have a shed or a barn to sleep in—I have them sleep in the barn almost altogether. I try to keep them dry, and I put straw bedding in there. Wet straw is what damages hogs.

President Farnsworth: We will close the discussion now, and hear the report of the Committee on Resolutions, if they are ready to report. We wish to take it up before any of those present have to take trains away.

The report was submitted and read by Mr. George E. Scott, chairman of the Committee on Resolutions. The several resolutions reported were separately acted on, as follows:

REPORT OF THE COMMITTEE ON RESOLUTIONS.

Mr. Scott: I suppose it would be better to take these up singly, because you cannot do it well collectively, as the resolutions are entirely different in character and nature, and I do not think you will want to act upon them collectively at all. I will read them and let you take care of each one separately.

Mr. Scott read Resolution No. 1 as follows:

"WHEREAS, Recognizing the importance to the farmers of the State of the proper enforcement of the dairy and food laws of Ohio, and realizing that this can be done only by an official of experience and training, and in view of the fact that the term of the Dairy and Food Commissioner is but two years, and it being the judgment of this association that a longer term is necessary for the attainment of the best results; therefore, be it

"*Resolved*, By the Ohio State Farmers' Institute, that we earnestly request that the General Assembly extend the term of office of the Dairy and Food Commissioner of the State to a period of four years."

On motion of Dr. Chamberlain, duly seconded, the foregoing resolution was adopted as read.

Mr. Scott read Resolution No. 2 as follows:

"*Resolved*, That we endorse the principle of direct legislation by the people, and request the General Assembly to submit to the people for their decision a proper constitutional amendment embodying this method which will enable the people to freely express their will on such questions as they petition to be heard."

On motion of Mr. Pontius, duly seconded, the foregoing resolution was adopted as read.

Mr. Scott read Resolution No. 3 as follows:

"*Resolved*, That in the interests of all consumers of cream and ice cream, we respectfully ask our present General Assembly to enact a law giving us a standard for these commodities that shall not be lower than that fixed by Congress for the District of Columbia and Interstate Commerce."

Mr. Scott: Possibly the gentleman who handed this in made it a little more brief than he wished to. He did not express what that per cent. was. I understand it is, for ice cream, 14 per cent. of butter fat, and that the cream from which it is made shall be the standard, 18 per cent.

Mr. Rondet: I move that the resolution be adopted as read.

Which was carried.

Mr. Scott read Resolution No. 4 as follows:

"WHEREAS, Recognizing the value of the veterinary college and its importance to the live stock industry of the State, and recognizing further the inadequacy of the present veterinary hospital, we recommend to our legislators that an appropriation be made to meet this need."

Mr. Scott: This refers to the veterinary hospital, I suppose, at the Ohio State University.

Mr. Miller: I move its adoption.

Duly seconded and carried.

Mr. Scott read Resolution No. 5, as follows:

"WHEREAS, Owing to the increased interest in forestry in Ohio, and the importance to our State of the preservation of our existing forests, and the re-foresting of areas better suited to that industry than any other, we ask an appropriation adequate to carry on this work in a way which will be for the best interests of our State."

Mr. J. W. Kellogg: Mr. Chairman, I move the adoption of the resolution.

Which was seconded.

Mr. Pearce: I do not think these resolutions ought to be passed without discussion. Everything goes here. I am connected with the Ohio Forestry Society and interested in its prosperity; but it seems to me, gentlemen, that unless you know something about this and what you are voting for, you ought not to vote for it. The wording of this is just like the resolution that was passed about the veterinary business; we do not know anything only what the author of that resolution stated. You all voted for it, and you will all vote for this, I presume, without thinking. It seems to me these things ought to be discussed and understood before recommending any certain action to the legislature.

Mr. Cary W. Montgomery: If the gentleman knew the laws of the state of Ohio, he would not need to ask that question. The laws require that all appropriations shall go to the Ohio Experiment Station, and unless you recommend a change in the law, there is where it will go.

Dr. Chamberlain: That is just the information that we want.

The question being taken on the adoption of the above resolution, as read, the same carried.

Mr. Scott: I have a resolution and a proposed draft of a bill, both of which have been handed in. I will read the resolution, which is short, and then if you want the bill submitted, which is quite lengthy, I can read it. The resolution is as follows:

"Recognizing the great value to the horse breeding industry of government inspection of stallions in France and Germany, we recommend to the consideration of our Legislature some measure looking toward the improvement of stallion service throughout the State."

Mr. Scott: The bill that I just referred to is quite lengthy. I leave it to your pleasure whether or not it shall be read. How about it, Mr. Chairman?

President Farnsworth: I think we will have it read and then we will understand it more clearly. It will take but a little more time.

Mr. Scott: This is a draft of a proposed bill to be presented to the Ohio Legislature, viz:

A BILL

To Encourage the Better Breeding of Horses in Ohio.

Be it enacted by the General Assembly of the State of Ohio:

SECTION 1. Before any stallions in the state of Ohio shall be used in public service, the owner or owners thereof shall procure a license permitting such use from the secretary of the state board of live stock commissioners. Such license shall contain the name, description (breed, age, color, height and marks) and pedigree of the animal licensed, and be recorded in the books of the state board of live stock commissioners.

SECTION 2. Before any stallion shall be licensed for use in public service, the owner or owners thereof shall make written application to the secretary of the state board of live stock commissioners for an inspection of such stallion. Applications for licenses shall be made by all owners of stallions sought to be placed in public service on forms provided by the secretary of said board, and a fee of twenty-five dollars ($25.00) for each stallion to be inspected shall accompany such applications to cover the expense of the board in making official inspections. Upon receipt of proper application and legal fee, the said board shall appoint a qualified inspector, or inspectors, to inspect said stallion or stallions, and report to the secretary of said board as to age, health, soundness, height, weight and heart girth of the animal or animals inspected.

SECTION 3. All stallions that have been duly certified by the authorized inspectors to be free from unsoundness or transmissible disease, and that were at least two years of age on the first day of June preceding the season in which they are intended to be used in public service, shall be licensed for such service. All licenses shall expire on the last day of February of the year following their date of issue.

SECTION 4. The licenses issued under this act shall be of two classes, viz.:

Class A—Including animals of pure blood, registered in stud books recognized by the United States department of agriculture. The official certificates of stud book registration must accompany application for licenses of this class.

Class B—Including cross-bred or grade animals and such as are not registered in stud books recognized by the United States department of agriculture.

SECTION 5. The owner or owners of each licensed stallion in public service shall post in a conspicuous place, clearly legible, printed copies of license of said stallion, not less than ten by sixteen inches in size, both within and without the main entrance or door leading into every stable or building where said stallion may be kept for service.

SECTION 6. Any stallion that is found upon inspection to be unsound or affected with transmissible disease, or of immature age, shall not be licensed for public service, but the owner or owners thereof shall be duly notified by the secretary of the state board of live stock commissioners to withdraw such stallion from public service at once. A certified report of all inspections of licensed, as well as of rejected, stallions, shall be kept on file in the office of the secretary of said board.

SECTION 7. Any person or persons, company or firm, who shall use or permit to be used, any stallion in public service, without having complied with the requirements of this act, shall, upon conviction, be fined not more than fifty dollars ($50.00) for the first offense, and not more than two hundred dollars ($200.00) for each subsequent offense.

SECTION 8. All suits for the recovery of fines, under the provision of this act, shall be brought by the secretary of the state board of live stock commissioners, in the name of the state of Ohio, the receipts to be credited to the agricultural fund of the state.

SECTION 9. The secretary of the state board of live stock commissioners shall publish annually a report of all stallions inspected, whether licensed or rejected, specifying the class to which each stallion belongs, name of owner, location of service, condition of soundness, age, height, weight, heart girth, color, marks, etc., together with a statement of all moneys received on account of license fees and all expenditures made in connection with carrying out the provisions of this act, and any surplus shall be placed to the credit of the agricultural fund.

SECTION 10. This act shall take effect and be in force on and after January 1, 1907.

Before Mr. Scott had completed the reading of the above, as it was growing late and the audience seemed to be impatient, the chair interrupted the reading, as follows:

President Farnsworth: Would the audience prefer to have the bill read through? We are a little limited on time this evening, and I think it would be well to take up first the previous resolution and act upon it, then if desired the draft of the proposed bill can be referred to a committee to look it over and study its provisions. You have heard the reading of the previous resolution.

Mr. Roudebush: I move the adoption of the resolution.

Which was duly seconded.

Mr. Dunlap: I do not think that we need any laws of that kind. We are having institutes all over the state that are educating people to know what they want. I do not think the people of Ohio need a guardian to tell them that. There are so many laws now that it costs the state a good deal to have them enforced. These institutes are for the purpose of educating people. If we did not need any such laws before we had the institutes, why do we need them now when we believe the people are better educated in the stock line than before our institute was organized? (Applause.)

Mr. Gillespie: I think that just such a bill as that ought to be passed. (Applause.) There are blind horses traveling over this country that are deteriorating the stock of the country. France has built up a great industry, and if we get the best horses from them it is because of their efforts along that line. They have guarded them with good laws. I am in favor of the resolution.

Mr. Sidle: We all differ in our views on this subject, and conscientiously, but I will heartily agree with the first gentleman who spoke on this question. We are all stock raisers and we are all being educated along certain lines. So far as what the other gentleman said is concerned, no matter what our laws are on the subject, we will always have deformed, lame and blind horses amongst us. It is up to the man who desires the service, and as we are educating them, it seems to me it is useless to parley over a subject of this kind. We do not think of it in our other live stock industries. It looks to me, gentlemen, that there is a class of men with their thousands and thousands of dollars, that is trying to shut out the small breeder. (Applause.)

Mr. Dunlap: That's it.

Mr. Roudebush: Mr. President, we want one-half at least to be sound (Applause); and whatever has proved to be a good thing for France ought to be a good thing for the state of Ohio. Wisconsin has just such a law as that resolution requests, and Wisconsin is a close second to Ohio along farmers' institute lines. When I look over the country and see the men who are keeping horses for service and who are blind to all defects of their own horses—of course they are, I have had a great deal of observation—about twenty per cent. of the owners of such horses should go out of business. A man does not necessarily have to have 1,000 head of horses to have a sound one. The smallest breeder in the state of Ohio can have a sound horse (Applause); numbers do not count for soundness. The way to have a sound horse is to have a sound horse; as Greeley, or somebody else said about resumption (Dr. Chamberlain: "Sherman."), "The way to resume is to resume." The way to have sound horses in Ohio is to start with at least one-half of them sound. (Applause.)

President Farnsworth: I guess we will put the question. Men on each side have spoken.

Mr. Miller: I apprehend there has been a little misapprehension. It is not endorsing that bill that the resolution refers to; it is for the improvement of this class of stock without prescribing the terms of a bill.

The question was taken, and the resolution was carried.

Mr. Scott read Resolution No. 7 as follows:

"We urge upon Congress such improvement of our postal laws as will give us such service as is furnished by the postal departments of the most advanced countries."

Mr. Scott: This refers more particulary to the parcels post.

On motion of Mr. Dunlap, duly seconded, the foregoing resolution was adopted.

Mr. Lazenby: I wish to announce that a meeting of the State Forestry Association will be held this evening in this building, in the room above, what is known as the assembly room of the Board of Trade. All are invited to attend this meeting. Tomorrow forenoon there will be a meeting of the State Horticultural Society, which also will be held in this building. The society also meets tomorrow evening and on Friday.

Music by the Cecelian Ladies' Quartette.

President Farnsworth: We will have with us this afternoon a gentleman from the Ohio State University. We have been going about the state trying to instill into the minds of the younger people who attend our institutes, the value of this institution and the necessity of higher education. Now we old fellows want to be students for a while, and listen to Professor Lord, of the Ohio State University, who will address us on the subject of "Chemical Inspection of Materials." Following that we will have an interesting address from Mrs. Virginia Meredith. I trust you will all remain and give them good attention.

Prof. Lord: The matter that I am to speak about, chemical inspection of materials, is one that is of more interest probably from a business standpoint than any other; but as I have been connected more or less with that sort of work, I thought possibly I could present some points in regard to it that might be of interest. I will try not to take too much time, because it is getting late.

"THE CHEMICAL INSPECTION OF MATERIALS."

One of the distinctive characteristics of the present condition of the various industrial processes is the extent to which they are based upon chemical study of the materials used. Probably to no one science is the world more indebted for its increased capacity for production than to chemistry. One of the effects of this development has been to bring to the uses of manufacture vastly extended sources of the various materials needed. Many substances formerly only obtained in small quantities from a few places are now found to be obtainable from a great number of sources.

In addition to this extension of sources of material it is also true that large numbers of substances formerly found in the natural condition or derived from plants or special minerals are today manufactured from entirely different raw materials by the various processes of chemical synthesis. This extended application of chemistry has made it necessary for the manufacturer or consumer, who wishes to intelligently employ the various materials of his art, to have accurate knowledge of the chemical composition of whatever he uses. To none of the industries is this of more importance than to that of the farmer. The literature supplied by the government and the various experiment stations discusses many of the most important problems of agriculture, largely from the standpoint of chemistry. Food, fertilizers and dairy products of various kinds are discussed from their chemical composition, and yet one of the great difficulties in the proper application of such information lies in the obtaining of correct knowledge of the materials as purchased on the markets and as used on the farm. In many of the larger manufacturing industries chemists are regularly employed as an essential part of the working force of the business. Iron and other ores, coal and metals are today very largely bought and sold on analysis. Within the last year or two the general government is purchasing a considerable proportion of its coal on analytical specifications. All of the metals used in the construction of ordnance is tested in this way, so that it may be said that chemical inspection is becoming almost universal in all the larger industries.

In the inspection of materials three things need consideration and should be thoroughly understood, that there may be a proper appreciation of what must be looked after in order that the results may be satisfactory and just both to those selling the material and those using it.

One of the first of these is the question of sampling. In taking a sample for analysis several different objects may be sought. In the first place, a sample may be taken with a view of ascertaining whether in a manufactured article any injurious or illegal ingredient has been incorporated. For such a purpose as this practically any portion or package of the material occurring on the market may be taken as a sample of the material for analysis. It is such sampling as this that is necessary under much of the inspection made in carrying out the pure food laws. It is not so much a question of quality as of the presence of injurious substances. Sampling of this kind is easy and may be left in the hands of any agent with sufficient integrity and judgment to provide for the proper identification of the material purchased.

The taking of a sample of material which is used in large quantities and of which the question at issue is not the materials present, but the percentage of certain valuable ingredients, is a question of much greater difficulty and one that has to be much more thoroughly understood. For instance, if a man purchases an iron ore on a guarantee of a certain percentage of iron for use in the furnace, it is by no means necessary, or even possible, to obtain a material of which every portion shall contain the percentage claimed. It is merely understood that a ton, for example, of the material should contain so many pounds of iron. The ore itself is variable, consisting of valueless portions and rich portions more or less intimately mixed, and it is the business of the sampler in securing the portion of this material for examination to see to it that the portion taken shall be of such quality and so prepared as to represent accurately the average composition of the mass of material covered by the unit of sale. Iron ore is sampled for this purpose by the car-load, and no chemist or company would think of rejecting a shipment because any small portion, taken at random, failed to correspond with the specification, provided the average composition of the amount purchased corresponded to the agreement. Of course, the variation from the standard must not be too large when tested on very small amounts. Now this principle of sampling applies to many materials that are furnished on the market as the result of mechanical mixture. The sample should represent the average composition of the material furnished under the sale. For instance, in the case of fertilizers, the average composition of a sack of fertilizer should correspond to the analysis given for the sack, and it is the business of the sampler to see that the portion submitted to the chemist for analysis represents this average.

OUTLINE OF METHOD OF SAMPLING.

ACCURACY OF METHODS OF SAMPLING.

Properly taken, samples of a mixed material should represent the average within at least three or four per cent. of the amount of any ingredient present; *i. e.*, if a fertilizer contains five per cent. ammonia, the sample should agree with the average within two-tenths of one per cent. of ammonia. Experiments made some years ago and given at the time in one of the annual reports, show that the method of sampling employed in fertilizer analysis by the inspectors of the State Board of Agriculture furnish safely this limit of accuracy. The method of sampling should be adapted to the material and should be tested to prove its adaptability.

PROTECTION OF SAMPLES.

It is important, in many cases, that the analysis be made within reasonable time after collecting of the samples, though this is a matter varying with the individual material. In any case, samples should be sealed to prevent particularly changes in moisture or changes from the effects of the air. In the analysis of materials of which the quality of some valuable ingredient is the important consideration, changes in the moisture in the sample have to be guarded against as far as possible, as drying out of the sample may lead to a large apparent increase in the percentage of some particular ingredient. This is sometimes guarded against by basing the contract and the report upon the material dried and freed from moisture. In many cases this is impracticable, and where it cannot be done, the analysis must be made so as to show the percentage of the ingredients of the material in the condition of moisture in which it is received by the customer.

METHODS OF ANALYSIS.

Much work has been done in refining the methods of analysis in use in inspecting materials. The United States government has for a number of years worked in connection with the Society of Official Agricultural Chemists in perfecting many of the methods used in analyzing materials of importance in agriculture with the object of, in the first place, securing accuracy, and secondly, increasing the speed and simplifying the methods in use, but even at the best, much of the work demands a high degree of special skill and training.

An important element in all analytical work of this character is to recognize the permissible limits of error in the analysis. Duplicate analyses made by different chemists or even by the same chemist, will always show small variation. In work of a good quality it should be less than the variation in sampling. The cause of these small variations, of course, lies in the impossibility of either perfect accuracy in weighing or of the perfect separation and purification of the different materials handled by the chemist. Each kind of material has its own range of variation. In fertilizer analysis a reasonable limit of error for most samples would be from two-tenths of one per cent. on most of the ingredients. I think the limit allowed by present laws of one per cent. on each ingredient is far larger than necessary, particularly on nitrogen or ammonia and on potash. Probably a variation of one-half a per cent. on either of these ingredients of a commercial fertilizer is greater than should be attributed to the combined error of sampling and analysis. In the analysis of a large number of samples duplicated during the present year a variation in the percentage of ammonia found in duplicate analyses exceeding .15 of one per cent. was very exceptional. Variations in the total phosphoric acid are liable to be somewhat greater, owing to the extreme difficulty in securing uniformity of the sample and preventing alteration, particularly in the percentage of insoluble phosphoric acid, but even here variations in duplicates in the total phosphoric acid rarely exceed .31 per cent., though in the case of the insoluble phosphoric acid variations of a half of a per cent. may occur where the analysis is made at considerable intervals. Occasionally samples composed of bone and similar materials will show large variations in the insoluble acid, due to the fact that small variations in the grinding of the material may affect considerably the solubility of the phosphoric acid. From what has been said it is evident that it is possible to sample and analyze the various materials on the market for the quantity of the valuable ingredients which they contain with a degree of accuracy sufficient to guarantee to the user the quality of the material. As has been explained, the large consumers and manufacturers protect themselves in their methods right efficiently by their own chemists and inspectors. The question of protecting the small consumer by state inspection presents peculiar difficulties and yet is one of utmost importance. As has been shown, sampling and analysis are demanding training and special skill. Furthermore, analysis is time-consuming and therefore expensive, and it is necessary to secure the maximum of protection at the minimum of expense. It is obviously impossible for the state, without an enormous expenditure, to act as private chemist for all purchasers of materials. To speak particularly of the inspection of fertilizers, it takes at least a day for one man to make a complete analysis of a single sample of fertilizer. Of course, a large number can be analyzed at a much more rapid rate per sample, but even at the best, the time amounts to considerable. The general system of inspection employed in this state aims to secure protection by its selection of samples at random from goods found for sale on the market, and by appropriate penalties and by the publication of all results, endeavors to make it too dangerous for the manufacturer to intentionally sell goods notably below standard. It should be remembered that the object of inspection of the kind discussed is not only the protection of the public against fraud, but also against error and mistakes, and furthermore, to furnish information so that a person buying a given fertilizer may know within safe limits the composition of the material that he is purchasing. For this object an important item is the uniformity with which a given brand is mixed. Fertilizer manufacturers are supplying materials supposed to furnish certain chemicals in certain amounts. The intelligent user of a fertilizer is supposed to know how much of these various ingredients he wishes to apply to his soil. The official analysis should furnish such information as to enable him to know that his calculations are on a sound basis.

Of course, the possibility of fraud and collusion in methods of inspection must be guarded against with the utmost care. Under the present system in use in this state the chemists making the analysis are prevented in every possible way from having any knowledge of the sources, the manufacturer or the name of the samples which they are analyzing. All the samples drawn by the inspectors of the State Board of Agriculture are remarked and renumbered before being sent to the laboratory at the university. No one in the laboratory can obtain any information until after the analytical reports are in the hands of the secretary as to what material is being analyzed, so that if it was the desire of everyone in the laboratory to falsify a result for the benefit of any particular party, it would be impossible to do so.

A second point of great importance is the absolute protection of the sample from interference by any unauthorized person. This, of course, means care in the protection of the samples. An important item in all inspection work is that it should secure the honest dealer from all liability to injury by error. For this reason the results of inspection should be reported promptly to the manufacturer affected by them. Where the results of the work are such as to show that either by accident or intention his goods were not as represented, he should, if necessary, be given the opportunity to review the analytical work. For this purpose he should be furnished a portion of the sample in dispute, that he may have it analyzed by his own chemist, if he so desires. In cases of differences, the common rule of inspection in the commercial industries is to refer a further portion of the disputed sample to one or more chemists for reference. In the case of the fertilizer inspection in Ohio, in the few cases in which other chemists have claimed differences in the analytical results obtained on the same sample, we have referred the sample for further analysis to the Department of Agriculture in Washington, who have always been willing to promptly analyze the sample and report their findings to the secretary of the Board of Agriculture, and their conclusions have been accepted as final in deciding the controversy. Such necessity for reference, of course, arises but rarely. In the great majority of cases a sample retested in the laboratory is accepted as confirming sufficiently the original analysis. In many cases several samples of the same brand are drawn with a view of investigating variations in mixture. Occasionally evidence can be produced that a single sample has represented an accidental mistake in mixing. Of course, the manufacturer is responsible for such a mistake, and while it is an error and in no sense an intentional fraud, it is an evidence of carelessness in the work which results in damage to the consumer.

It was not the intention of this brief paper to attempt to justify the necessity of inspection. It is believed that that is recognized so generally that it will not be questioned, but merely to outline some of the points that must govern those charged with the legal side of providing the regulations and machinery for putting such inspection into use.

Discussion.

President Farnsworth: Gentlemen, we have a brief time to discuss this paper that has been presented to us in such a nice manner. If you want to take a few minutes to discuss it, let us hear from you at once.

Mr. Harbaugh: I would like to ask the professor if we can take samples from the fertilizer, as we buy it in the fall? Last fall I bought twenty-five sacks of one kind of fertilizer, and rather suspected an unfair deal. So I thought I would sample it and send it in; yet I do not know whether my samples would be of any value or not. They are sealed up tight in the sacks, but the samples had to be taken after they had been in the sacks probably thirty days before we got them.

Professor Lord: In regard to that, I have made it a rule never to receive any samples of fertilizer except those that came through the secretary of the State Board of Agriculture. I think if the secretary will send such samples, he could arrange for their analysis. They would be sent to me without my knowing where they came from, or anything about it.

Mr. Harbaugh: If I had taken twenty-five tablespoonfuls, one out of each of the 25 sacks, would that be a fair sample?

Professor Lord: I think hardly fair, if taken out of the top of the sacks. A sample should represent a cross-section through the sacks. The way we take them is with a tube that will cut through from side to side. After taking from several sacks these are thoroughly mixed up. You say you have 25 sacks to sample? Well, the way I should have sampled those would be, as you emptied the sacks, to take out half a cupful first from what comes from the top, then from the middle, and then from the bottom of the sack. Mix all those together, doing the mixing rather rapidly. Take three or four cupfuls thus mixed up from various parts of the sack, put them into a Mason jar and seal it up tight, and that will give you a pretty fair sample. The top, middle and bottom of the sack will vary somewhat by having been thrown about in transportation, etc.

Professor Lazenby: Is it not a little strange that there have been no prosecutions under this law that we have had for the protection of the farmers respecting fertilizers? If there has been no cause for any, I think that the manufacturers of fertilizers must be a rather unusual set of men, and I am glad that we have men of such honesty making these goods.

But I think there was one point in the paper that shows where there is perhaps a little too much leeway. I should like to see the law corrected there very much, as Professor Lord suggested. In those fertilizers that have a low percentage of ammonia and nitrogen, there is a leeway of one per cent. That certainly should be corrected. That amount of leeway in a fertilizer could make a very considerable change in the valuation of a large amount. If that could be reduced one-half I think it would be an improvement in the law.

Mr. Sellers, Perry County: The fertilizer companies are sending out what they call steamed bone, guaranteeing it to contain one and five-tenths per cent. ammonia and 27 per cent. phosphoric acid. If that steamed bone is adulterated with sand, so that 50 per cent. of the resulting mixture is sand, or more than 50 per cent, what effect would that have on the analysis, I would like to ask Professor Lord?

Professor Lord: If before adulteration with the sand it contained 27 per cent. phosphoric acid and two per cent. of ammonia, and then by the addition of sand its weight was double, you would get in the resulting mixture thirteen and one-half per cent. of phosphoric acid and one per cent. of ammonia. It is only fair to the manufacturer to say that in such a case the residual phosphoric acid would be just the same as it would if the sand was not there. You are simply paying frieght and storage on that much sand. I think the point made in regard to changing those limits is somewhat important; for instance, a man may claim one and one-half per cent. ammonia, and we find that it simply contains two-tenths of one per cent. The law gives him a limit of one per cent. of nitrogen, which is one and two-tenths per cent. of ammonia, so that he can put into that instead of one and five-tenths per cent. only thirty-five hundredths per cent. and we cannot prosecute him. I say that is not right.

Dr. Chamberlain: I think that the law should be changed in that respect. I wrote that law myself in the winter of 1880, and re-wrote it after comparing it with the New Jersey and Connecticut laws, and got it passed through the legislature. Professor Lord was chosen as our chemist, and from that time until this I want to say that there has never been but one case of serious error, and that was immediately corrected; and there has never been any charge of graft laid upon the Board of Agriculture in these twenty-eight years, nor upon Professor Lord or his assistants. I say that is a remarkable record, a remarkable record, and it has been for the protection of the farmers.

Now as to the point that there have never been any prosecutions. I think that the manufactures of fertilizers have, on the whole, been a fair body of men and have tried to live within the limit of the law, and that is the reason there have been no prosecutions. Just at the present time there is a pretty serious business to come before the courts in which there are variations all the way from two per cent. up to six or seven per cent. with evident knowledge of wrong doing on the part of the manufacturers concerned; and the Board of Agriculture now has on its hands, for the first time, a pretty serious prosecution.

Dr. Wagner: I would ask Professor Lord, in his analysis of samples of steamed bone, what per cent of such samples did he find adulterated, if any, and what is the adulterant? Also will you tell us to about what extent it is used?

Professor Lord: I do not know that I can answer that question. We have analyzed this year—I have not made up any statistical details of that at all—we have analyzed quite a number of samples of steamed bone, and I do not think there has been evidenced in many samples any large adulteration with outside material. I would not like just now to express any opinion of the actual amount in number. I have found perhaps one or two in which I thought there had been rock adulteration, but very few. Most of it was inert material like sand, some filler that was apparently mixed in and which, of course, did not affect the value except as to the per cent. Of course, if there was a lot of sand mixed in, the phosphoric acid percentage would drop down. I think a more serious adulteration would be the replacing of steamed bone by unacidulated rock, or where you would replace soluble acid with a non-soluable one. We test every one of them for the presence of rock. In the few cases that we find it, it generally has been inert material, I mean material that does not contain any phosphoric acid in any other form, merely a diluent, which analysis shows at once, of course.

Mr. Montgomery: I would like to ask if it is practical to get a report sooner of the analysis of fertilizers? It does not cause a farmer to feel very well after he has purchased, and applied a fertilizer last spring, and has harvested his crop, to then find that the fertilizer is pronounced bad and not up to the standard per cent. Cannot there be some practical method adopted to find out this result sooner?

Professor Lord: That question has come up very often. It is one that I would rather not myself undertake to discuss, that is, the matter of the legal standpoint, with which I have not much to do. I will say that analyses can be made pretty shortly after the samples are received, provided not too many are sent in at once. As a rule we can get out from 10 to 20 samples a week, say. One trouble is that these samples are drawn, you know, as they can be picked up on the market, and they have to take them when they can get them of any particular brand, so that particular samples may not be drawn until after the goods have been sold. But usually we try to get samples for that year, that is, samples taken this summer will all be published the following fall, and before the next spring. The idea has been, I think, that the analyses shall be published in the fall and winter, so as to tell the applicant something about what he wants to know.

Mr. Montgomery: An inspector took a sample of the goods last spring. I applied it. Six weeks ago I inquired for the report and could not get it. Through the newspapers I learned that it was very bad goods.

Mr. Pengelly: We constantly find that manufacturers are branding goods as bone which contain part rock. Is that right? We pay $4.00 a ton for it, and what have you got? So far as the brand on the sack goes, it appeared to be all bone and to contain 14 per cent. acid phosphate. The manufacturer is honest and only charges a reasonable price for his goods, but you will find occasionally a business agent who has an appetite for all the profit that he can get and put into his pocket, and he will sell you rock and call it bone. There are thousands of men using fertilizers that buy it because it is branded bone, and they think it is animal matter. I do not believe the brand of bone should go on any sack that has more than five per cent. adulteration in it. The farmer should be protected. If you are in a position to protect us, if you can use your influence, we would like to have that established into law for the protection of the farmer, and it will go a long way toward protecting him from getting goods that he does not want. For my part, I believe that the manufacturers throughout the country are striving to be honest. They may err. Possibly samples may go out that ought not to go out; and there are sometimes those who are indifferent to the farmers' interests who are employed as agents. It is impossible for a manufacturer to have his eye upon every employe, even though he exercises all the care possible. I believe that the manufacturer today is just as honest as any other man engaged in business. I do believe that the farmer should be protected, and that as citizens of Ohio we should unite together to formulate a law for the protection of the farmer and also of the manufacturer.

A Voice: I know that a great many farmers use rock goods because it is branded wrong. They think they are buying bone. I think the law is defective in that particular.

Professor Lord: I would like to say that the samples of fertilizers, the names of which are printed in the report, were marked as appears in the report.

Dr. Chamberlain: The Board does not call any bone that are not bone, but some manufacturers do.

Professor Lord: We do not call rock, bone in our reports.

Mr. Pengelly: Where one man receives the report from the State Board, there are five hundred others who never see it, and they may buy defective goods that contain rock, when they think they are using bone. We must protect the man who cannot protect himself. The man who can protect himself can fight his own battles.

Professor Lord: I think that point is fairly well taken, that the brand should correspond to the nature of the material, most decidedly. I am not here, however, to discuss the law; but we have been very careful in our report to publish rock under the tabulation of rock.

Mr. Scott: A great many are here waiting to hear the lady on the programme.

President Farnsworth: In our work throughout the state, we find the ladies have just as much to do with successful farming, and probably more than the men. We want to discuss this afternoon the social life of the young people on the farm, which has a great deal to do with our success as farmers.

I am more than pleased to have the privilege of introducing to you this afternoon, Mrs. Virginia Meredith, of Cambridge City, Indiana. (Applause.)

"SOCIAL LIFE OF YOUNG PEOPLE ON THE FARM."

BY MRS. VIRGINIA MEREDITH, CAMBRIDGE CITY, IND.

Ladies and Gentlemen:—We are in the habit of allowing our young people to make their own social life, sometimes with results that are disastrous to themselves and a grief to us. If one were asked what is your dearest wish for your daughter, what is your dearest wish for your son, the answer, if entirely frank, would be a happy marriage and a satisfactory home life. And that is a noble wish, a noble wish because it means a well rounded, well developed character. It means poise, tolerance, justice, activity in church and society and good health, so that they may discharge duties and enjoy pleasures.

We often hear parents say: "I wish I could do more for my children," and by doing more they mean better dress, better furniture, more accomplishments. Now these are not the things to regret; not at all. Who is the girl that is guilty of the greatest breach of social observances? The girl that "runs away," as we say, to get married, utterly forgetful of the love or the sorrow of father and mother. Is it not the daughter who has been indulged, who has had opportunities and advantages, who has been spared all self-denial, all sacrifice, whatever is unpleasant and hard? In fact, she has been trained assiduously in selfishness. Upon reflection we shall find that such a girl more than any other is the one that makes a hasty and ill-considered marriage. We are inclined to criticize the marriages of our young friends; we comment unkindly without analyzing the social conditions, the social life that was behind the marriage. Why does a really nice capable girl marry a thriftless, irresponsible man? Why does a sensible industrious young man marry a silly girl? I will not attempt to answer these conundrums, but I will say that oftentimes the reason is found in this: The foolish girl makes this foolish choice of a foolish husband because she has never had the opportunity of meeting the young man in her home socially, where she might measure him with her father and her brothers; and curious as it may seem, the most foolish young man is always wise enough to avoid that kind of measurement. He insists on doing his courting on the streets or in public places, or in the seclusion of the parlor or best room. He does not give the girl the opportunity of seeing him socially in her family.

This brings us to the point that early in the life of our child we should form the habit of inviting to our home the friends of the child. We should early establish that habit, and so prepare the way or the foundation for a rich social life. Of course, our children will form friendships that we do not like. By the way, I recently heard a splendid talk by Judge Lindsay, of Denver, that grand man who has done so much in the Juvenile Court. It was a talk to mothers. He said: "Mother, do not say to your boy, 'don't go with Johnny because he is a bad boy.' That is not the thing to say to him. Make your boy so strong that he will help Johnny. You should help him to help Johnny." But it is natural for us to want our children to associate only with the best and oftentimes it will happen that if our child has made a bad choice of a friend and brings him to the home and has to make excuses for him, has to apologize for his conduct, after a while that friend ceases to be attractive, or possibly, having been brought into our home where there are good influences, that child will improve and merit our good opinion.

Conversation is the greatest pleasure in social life. There is nothing that compares with conversation. We sometimes ask the question, What shall I do to entertain company? and often resort to things that are perfectly paralyzing to the guests; but just plain talking is the greatest enjoyment. There are people that seem to have no gift in conversation; they have no sense of responsibility in responding to conversational advances. The power to talk, to converse, comes from a full mind, and a fair vocabulary; the full mind may come from observation, from thinking, from reading. The gossip is really rich in observation of current happenings, and is rich in knowledge of human nature —its curiosity and credulity. Our credulity is a marvel! You know there are people that will not believe that the earth is round; there are people who do not believe that there is a great Creator; yet those same people, on next to no evidence, will believe that their neighbor is a villain and that their dearest friend is a traitor! But the point is, that entertaining conversation comes from a rich mind; it comes from a good vocabulary. A good vocabulary is not so difficult to acquire as one might think. Children often use "big words," and this ought not to be repressed or ridiculed. but ought to be encouraged. The way to enrich our vocabulary is to make a new word our own by use. Whenever we hear a word that is apparently a good word, use it; then it is our own. It is said that profanity is often the result of a very meager vocabulary. A man does not know the exact word which will express his feelings, and he resorts to a profane word, which means everything from endearment to anathema. (Laughter.) An educated person will perhaps have a vocabulary of ten thousand words, while an ignorant one will have only five hundred words.

The social instinct finds its first expression in play; "play is the highest point of human development in the child stage." "The sources of all good are in play," and there are those who believe that there is an obligation upon the community to furnish opportunities for organized play, and so we are seeing all over the land city school yards used in summer time for play grounds for the children. Children in the country have superior opportunities for play—very superior opportunities. We ought to encourage them to play, because play is the source of all good, and the child ought to have opportunity for play as a means of exercising its social instinct, which after a while develops into the higher forms of social life.

Before the law, you know, we are infants until we are twenty-one years old; we are not mature in body nor in mind until after we are twenty-one; and this long infancy is at the very root of family life and civilization. This long infancy, this period of comparative helplessness, means social environment, it means parental care. Henry Drummond has a most beautiful reference in his book, "The Ascent of Man," to this subject of the power that one has over the child through this long period of immaturity. In the chapter on "The Evolution of a Mother," he illustrates it in this way: He says of the butterfly that the worm mother does not know her child, and the child cares nothing for the mother, does not need the mother, but comes into life perfectly equipped and prepared for its duties and its functions. But how is it with the human child? It comes into life absolutely helpless; it cannot live except for care; and so we find this long period of care and tenderness creates love which lies at the foundation of family life and of civilization.

Felix Adler says that every child is entitled to "the best in life." What is the best in life? There are three things that make for success and that are indispensable to success; health, ideals and preparedness. Where do we get our health? How do we come by health? How is health established? It is established in the home, by the kind of food we eat, the kind of sleep we have, fresh air, and all those things that the home folks make for us in our sleeping and waking hours.

Ideals—who gives us our ideals? We get those, too, in our homes. It is what is thought in our homes that makes us what we are. You know that old story about Lincoln, who was reared in a home in which there were but six books; but oh, what good books! How did those six books happen to be in that home? It was a wretchedly poor home, you know. How did it happen that those six books were brought from Kentucky into that poor Indiana home? It was because there was a woman in that home who believed there was something good in books, who had high ideals. That boy was a rare boy who had his ideals made by the woman in the home, and the books that he read there.

Then I say preparedness—I mean by that the making of opportunity for the child, the giving him an education, giving him those opportunities that fit him for his work. Every child is entitled to the best in life—a home.

I ask your attention to four propositions that bear upon the subject of home. The first is my definition of home: Home is a place and an opportunity for the right development of the physical and spiritual natures. I will go farther than that; I say it is the only place in which the physical and spiritual natures can be rightly developed.

My second proposition is that the home is the most expensive institution in existence. We talk about how much it costs to maintain our schools, our churches and all that sort of thing, but that cost is slight compared to the immense sums required to sustain our homes from day to day. Home is the most expensive institution in existence, and its expense can be justified only on one ground. It would be far cheaper for us to live in large companies of a dozen, two dozen, or a hundred together, as they do in asylums. There is but one thing that justifies this expensive institution, and that is the protection and perfection of child life.

My third proposition is, that the making of the home, the organization of the home, is always a personal enterprise which is inherently and perpetually the work of the individual. A syndicate, a company, a corporation can never make a home.

My fourth proposition is—and it follows from the others, I am sure—that the one who makes and organizes the home is entitled to adequate preparation; home making is the most difficult business in the world, the most important business, and yet the one for which we give really but little adequate training.

We ought to have right standards of living. Who makes our standards? Ah! who does make our standards? Do we make them ourselves? Have we knowledge enough, any of us, to say what is the right thing? Some one has said that it is the woman behind the pocket book who determines our destiny. The way in which the money, the income of the family, is spent, determines the destiny of the family; and the woman by her ideals, by her knowledge and by her ambitions determines largely how the money is spent. I know you will say she does not hold the pocket book, she does not spend it; but she does—I am sure she does—guide the expenditures of the family. We see it again and again everywhere. We see families in which there is an aspiration for everything that is good, and we say, "Those children are going to get along, their mother is such a fine manager;" then we see other families in which everything is at odds and ends, sixes and sevens. Nobody expects anything of such children. We say, "It is no wonder, their mother is such a shiftless woman." Perhaps in neither case did the woman handle the money; but in either case she directed the channel through which the money would buy culture or coarseness.

There are four avenues in which money is spent; for existence, for comfort, for culture and for philanthropy. Of all the dollars earned today in these United States but a small surplus goes over into what we call savings; almost all the dollars earned are spent in the homes and for the homes; and to rightly proportion the expenditure for .existence, for comfort, for culture and for philanthropy is really the problem of the women and determines the destiny of the family. I say that we may buy culture, or we may buy coarseness, and the way in which we spend our money determines the destiny of the family.

It is said that there are two kinds of economics, masculine economics and feminine economics. Masculine economics uses men for the purpose of creating wealth; thus men are employed in great numbers to develop and carry on business and carry on commerce. Men are used for the purpose of creating wealth, for making money. Feminine economics uses money, uses wealth, for the purpose of making men; that is, women use money in making homes which are places and opportunities for making manhood and womanhood. So we come back to this feature of the home—hospitality. Hospitality is not reciprocity. There are some people who make it a means of reciprocity, but hospitality is something else; it is sharing our home without any hope of reward. That is what we should do with our young people. We want to bring them into our home—if we have a good home—with books, music, good furniture, everything there pleasant and agreeable to us—we want to bring those less fortunate to share our home. The way to express our social service is through hospitality.

I suppose there is no one subject on which we will so soon disagree as upon the subject of permissible amusements for young people. I said a bit ago, talking, conversation, was the greatest source of social enjoyment; but it needs to be supplemented with every resource that we have, music, games of the right kind, dancing of the right sort, cards under right conditions—all of those things; yet as soon as we begin talking about amusements we will at once disagree; but we should remember that it is the easiest thing in the world to be mistaken. To make a mistake is an almost universal failing. None of us are infallible in pronouncing on amusements.

Dr. Holland in one of his books tells us about a poor young man just barely able to keep himself afloat, who tied a matrimonial millstone around his neck mistaking it for a life preserver. (Laughter.) Now, there is some resemblance between a life preserver and a millstone; they are both round, they both have a hole in the center. Dr. Drummond tells of blind men who were taken to a menagerie and permitted to touch an elephant. Afterwards they were discussing the matter and each one tried to tell just what an elephant is like. The one who had touched his tail said: "Oh, an elephant is like a rope;" the one who had touched his hind legs said: "Not at all, an elephant is like a tree, he has a trunk like a tree;" the one who touched his side said: "No, no, an elephant is like a wall," and the one who had touched his ears said: "You are entirely mistaken, an elephant is like a leather bag." Each was right from his own point of view, but no one of them had any right knowledge of what an elephant really is. And so it is in regard to amusements; we make such mistakes, each from his own standpoint of judgment, and we do hurt so dreadfully those whom we would help. I think that the blackest darkness of farthest Hades ought to be reserved for those who have by perversion and by prejudice narrowed the list of permissible amusements for young people. (Applause.)

The Lord Chief Justice of England made this declaration last year, and I do not know when I have read anything that impressed me so much. This is what he said: "I have been on the bench and in practice before the bar for forty years. It is my deliberate conviction that as a cause of crime second to drink, and second only to drink, is the difficulty of providing innocent amusements and healthful recreation for young people." It is difficult—it is difficult. How did he come to say this? I will tell you how it happened. You remember a few years ago the English were concerned because their manufacturers were being undersold in the markets of the world, and there was a parliamentary inquiry to learn why. The answer came back: "It is because our workmen are not so efficient as they used to be; they cannot do in ten hours as much work as in Germany and France is done in ten hours, consequently our manufacturers cannot make as good prices in the markets of the world. That is why we are undersold. Why are our men not so efficient as they used to be? They are drinking too much poor beer and whisky and living dissolute lives. They are doing things that undermine their physical and mental powers. In seeking amusement and recreation they are not finding that which is innocent and healthful. What shall we do for them?"

Well, they called a great meeting; one of the greatest ever held in London. The Lord Mayor presided. It was a great meeting organized to look after the physical improvement of the working men, and the Lord Mayor made the declaration that there were four hundred thousand young people in the city of London that needed some supervision of their pleasures, and the Chief Justice added this statement, which I have recited, that "As a cause of crime second to drink, and second only to drink, was the difficulty of finding innocent amusement and healthy recreation for the young."

What are our homes for if not to provide innocent amusement and healthful recreation? That is what the home should be for. So then the burden is upon those of us who are in homes to provide innocent amusement and healthful recreation. I believe it would be very difficult, much as we may disagree about this, that or the other—I say it would be very difficult to find any amusement that would be wrong in the home of a sensible and kind woman. (Applause.) So then let us enlarge the list of our amusements as much as possible by bringing them under right conditions into our homes, making our homes places where amusement and recreation may be had that are innocent and healthful.

Young people crave amusement and simple things satisfy them very well, indeed. Young people have slim resources within themselves for pleasure and that is why they crave companioship. The simplest things will often be the most agreeable and give the most pleasure. Anybody who has a long purse may order music, the caterer and the entertainer, but the one who really gives pleasure is the one who provides something novel and simple. I have young people in my family. We live on a farm; we have never lived anywhere else; and the young folks sometimes have the very best time and the most fun with very, very simple things. Oftentimes when people are going to have company the first thing they will say is: "What shall we have to eat?" I will tell you about one of the best times our young folks ever had. Some young folks came out from town—and by the way, it is a whole lot easier to entertain town people than country people, as you will see when I tell you what we had for refreshments. Well, it was Shorthorn milk! We had milk brought out in the yard in the crock, an old fashioned earthenware crock. The cream was still on it, and it was brought from a good cool spring. We had good bread. That was all we served to those folks; and because we had it out in the yard with no formality and dipped the milk out of a crock, they thought it great fun. If we had been living in town we could not have done that sort of thing. So I say it is a whole lot easier to entertain company in the country, especially in the summer.

We have a stream that runs through the farm a little way from the house, where our young folks often go to cook suppers just as soon as the roasting ears come on. They prepare themselves all the things that go to make a picnic supper. Such a supper would be better in the house, but they would not have so much fun. The point is, they do it themselves. That is the point we must remember, to put upon them the responsibility of entertaining. A girl will soon find, if it is only fudge and she makes it herself, that after a while she makes good fudge—if there is such a thing as good fudge. (Laughter.) It is the doing things together that makes such fun. If it is only rehearsing a charade, it is the rehearsing that gives pleasure, it is not the producing it on the formal occasion. We love to pretend we are somebody else. The little girl when she is no higher than that, will get her mother's apron, put it on behind and trail it as though she were a queen. So with young folks; if they can have theatricals, the simplest thing in the world, if nothing but a charade, they are delighted. I am willing to trust young people to have a good time when they get together. That is what I insist upon, that older people should open their houses freely. It gives young people a great deal of self-respect to feel that they can invite company, and when they come home and tell father and mother about it, have it seconded. We need not be afraid that such liberty will run away with them. If we are considerate they will be considerate. That is the sort of social training that leads on to better things. Have you not seen many persons grow to maturity and not know how to make an introduction properly, so awkward, so unable to approach people? If we want to make our church, our schools and our politics better, if we want to do anything that is worth while, we have got to persuade somebody else to think as we do. How can we persuade them? Only by having ease in approaching them, only by having confidence in ourselves when we talk to them. Social training is really the great training of life.

I have not very much patience with the admonition, "When you are young prepare for life." The young are living life, the richest, finest life! Many a child has ended at two years of age a finished life, a perfect life, leaving an influence which will go on through the years. I remember that story about Leland Stanford, Jr., a boy who died when he was but nineteen years old. One time he said: "I wish every boy in California could have a chance!" The great Leland Stanford University is the fulfillment of that wish. His life was well rounded; it was finished. When do we have such need for courage, for justice, for all the beautiful traits as when children? And the troubles of children, I think, are very serious, very real, so that life is never lived so naturally, so perfectly, so finely as it is when we are young. So then we do not want to be saying: "Prepare for life," we want our young folks to live life, to live it as they go along. We have a right to joy as we go through life from day to day, from week to week.

The power of choice is the greatest privilege in life, and we may choose to make our life what we will. James Lane Allen in his little book "As a Man Thinketh," says that "Thought is the master weaver, the master weaver not only of the inner garment of character, but of the outer garment of circumstance." He says you cannot conceal thought, and that many a man is more anxious to improve his circumstances than he is to improve himself; but that what we think, we are. So it is that if we think right things toward the young people, after a while we shall do the right thing, we shall make our homes centers of hospitality; and that is what I am pleading for, that these young people may have opportunity for rich social life, and that the right place for social life is in the home.

George Eliot in one of her novels makes the heroine after many troubles and all kinds of deprivations, come into the luxury and ease of Transome Court. But the life of ease and luxury soon became tiresome; ease was tiresome, luxury was tiresome. Why? Because of "the absence of high demand." It is high demand that gives joy in life! It is high demand that appeals to us in attempting the difficult thing which is to provide innocent amusement and harmless recreation. Is it too difficult for us? Must we fail before such a challenge?

It seems to me that in the country we have great opportunities, for there is always in the country that democratic spirit I spoke of a moment ago; and all classes come together with great freedom. We can do things freer from criticism; not bound by what other people say. So then let each one of us take home this thought, that we shall strive to give a richer, stronger, finer life to our young people; and by doing that we secure a better life for ourselves. It is a great privilege all through a long life to be identified with the young people: it keeps us young in heart, makes us broadminded, kind and sympathetic. In giving our young people a richer social life, let us be "The sweet presence of good diffused and in diffusion ever more intense." (Applause.)

At the conclusion of Mrs. Meredith's address several gentlemen arose and vied for the honor of proposing a vote of thanks for her excellent address, and the motion carried unanimously.

The chair introduced Secretary Hatfield, of the Y. M. C. A., who spoke as follows:

REMARKS OF SECRETARY HATFIELD.

Ladies and Gentlemen:—I thought while listening to the excellent address we have just heard, that the Young Men's Christian Association's work is along the lines recommended by Mrs. Meredith.

In the rural communities of Ohio there are today four hundred thousand boys and young men. The great majority of these have had their educational training in country schools and we are told that the greater number of them leave these schools before they are fourteen years of age. This indicates that a large percentage have not obtained more than the mere tools of education. simply reading, writing and arithmetic.

Of this number of boys who are going to be farmers, we find that there is only one per cent., as Professor Price just told me a few minutes ago, who have the advantage of a college training, a full college course; while five per cent. receive some of the benefits of college work. So ninety-five per cent. are out in the homes, out in the fields; and the Young Men's Christian Association is co-operating with the agricultural college, with the Experiment Station and with other good agencies in endeavoring to bring not only educational activities, but athletic activities, social activities and religious activities into the lives and homes of these boys and young men. The state executive committee of the Young Men's Christian Association has established a department, with a secretary employed, to give his entire time to the supervision and extension of the work. We have one county organized, that of Medina. It is the purpose of the committee to extend this work throughout the remaining eighty-seven counties of Ohio, each of which is to be organized under a plan that will occupy the whole State inside of twenty-five years.

The thing that I want to bring to your attention is, that in this work, as we shall extend it from county to county, we ask your consideration and co-operation. Mr. E. I. Wright, of Medina, is the chairman who has charge of this work.

and he is very much interested in it. Some of you will have opportunity, if you should be interested, to consult him Friday afternoon, as he will address the Horticultural meeting. There are a number of counties in this State that are ready now to be organized. We are extending the work on a group basis, starting in the northeastern section. After organizing three or four counties there we shall be ready to take up another group and continue along the same line. I bespeak your hearty co-operation whenever opportunity shall offer in helping the Young Men's Christian Association to do this very thing that Mrs. Meredith has recommended to you, in making the highest social life possible for our boys and young men.

President Farnsworth: Ladies and gentlemen, I sincerely thank you for the good attention you have given me and the various speakers. You have assisted us very materially. It has been a pleasure for me to preside over this audience, and I am satisfied from the work that we have had here yesterday and today, that we will go home feeling that our time has been well spent, and we will carry to our homes better ideals, and if we try to live up to them we will make better men and women, as well as better farmers.

We will close with a selection from the quartette, after which we will stand adjourned.

Music by the Cecelian Ladies' Quartette.

Adjournment.

REPORT

OF THE

ANNUAL MEETING

OF THE

Ohio State Board of Agriculture

HELD IN THE

Board of Trade Auditorium

IN THE

City of Columbus, Ohio

THURSDAY, JANUARY 16

1908

PROCEEDINGS

OF THE

Sixty-Second Annual Meeting

OF THE

OHIO STATE BOARD OF AGRICULTURE.

The sixty-second annual meeting of the Ohio State Board of Agriculture was held on January 16, 1908, at the Board of Trade Auditorium, Columbus, under the presidency of Mr. L. P. Bailey, of Tacoma; T. L. Calvert, Columbus, secretary.

The following is a full stenographic report of this meeting, including papers and discussions.

MORNING SESSION.

The meeting was called to order by President Bailey, who announced as the first number on the programme, vocal music by the Cecelian Ladies' Quartette.

President Bailey next introduced Rev. E. L. Rexford, of All Souls' Church, Columbus, Ohio, who offered prayer.

PRAYER.

Spirit of the Everlasting Life, we pray Thee that the day has come when the wisdom of Thy children is discerning that all necessary interests are one: that they are discovering that Thou workest as faithfully in the dull groping of the rose root in the earth as in its fairest bloom; that Thou art in the fields as in the heavens above; and whosoever shall find the best meaning even of the lowliest toil is one with him who finds the highest; and when we have found the best meaning, there is nothing lowly, there is nothing common, but everything is exalted in the mind of him who finds the Spirit in toil.

The earth is the Lord's and the fullness thereof; the fields are Thine and the forests; and the cattle grazing on the hills and in the valleys; and whosoever will do the work of life well is helping to build up the Kingdom of God. We pray that these Thy servants may realize that the work they are doing on this side of the street is as sacred as that on the other side, where men are making laws, and that all interests are one great interest if we do but discern the soul of it.

We praise Thee that Thou hast put it into the minds of these Thy children to recognize the Spirit in their deliberations. Here may they learn that all faithful work is the source of happiness and well being, and that it is false work and false thinking and false feeling that create the miseries of the world, while fidelity brings the heavens near.

Into this work may we come never consenting that any form of industry is lowly if it but make for the good of the people. May that good be the ruling passion of our lives in whatsoever we do, whether on the farm or in the shops, in the banks or legislative halls, or in judicial courts. May we realize that all the essential interests of the people are one great interest, conducive to this divine result of the co-operation between all essential things.

We invoke the blessing of Thine approval upon all conventions like this, upon all assemblies, upon all churches, schools and homes, that no interest may be regarded as alien from the common love of God to the end of the enriching of all.

We invoke the blessings of Thy favor upon the deliberations of these Thy sons. Amen.

President Bailey: Ladies and gentlemen, it is customary for the Governor to address this body some time during the forenoon, and it has been the custom heretofore to appoint a committee to wait upon the Governor and escort him to this hall. I will therefore appoint as such committee Hon. Samuel Taylor, Franklin County; E. P. Chamberlain, Logan County; Jacob Faber, Williams County; A. S. Johnston, Clermont County, and Major A. W. Moore of Guernsey County. The committee will please retire at this moment to the Governor's office and he will be ready to attend you. While the committee is absent on that mission, the secretary will call the roll of counties, and you will answer to your names.

LIST OF DELEGATES

COUNTIES.	NAMES.	POSTOFFICE.
Adams	W. S. Kincaid	West Union
Allen	C. A. Graham	Lima.
Ashland	J. W. Stillwagon	Ashland
Ashtabula	H A. Mixer	Ashtabula.
Athens	F. S. Beveridge	Chauncey.
Auglaize	A. S. Schaffer	Wapakoneta.
Belmont	R. M. Eaton	St. Clairsville
Brown	V. K. Thompson	Georgetown.
Butler	J. A. Slade	Hamilton.
Carroll	J. H. Roudebush	Carrollton
Champaign	C. H. Ganson	Urbana.
Clark	S. Van Bird	Springfield.
Clermont	A. S. Johnson	Amelia
Clinton	J. R. Ross	Blanchester.
Columbiana	S. Pottrof	Lisbon.
Coshocton	H. T. Clark	Coshocton.
Crawford	Guy E. Smith	Bucyrus.
East Cuyahoga	E. C. Foote	Warrensville
West Cuyahoga	D. G. Hoftizer	Olmsted Falls
Darke	L. N. Reed	Gettysburg.
Defiance	W. S. Tomlinson	Bryan.
Delaware	Harry Bieber	Delaware.
Erie	C. F. Steen	Sandusky.

LIST OF DELEGATES—Concluded.

COUNTIES.	NAMES.	POSTOFFICE.
Fairfield	W T. McClenaghan	Lancaster.
Fayette	William McCord	Washington C. H.
Franklin	John M. Lehman	Canal Winchester.
Fulton	D. W. Williams	Wauseon.
Gallia	John E. Mills	Gallipolis.
Geauga	H. W. Pettibone	Chagrin Falls.
Greene	C. M. Austin	Bellbrook
Guernsey	James W. Moore	Washington.
Hamilton	D. L. Sampson	Cincinnati.
Hancock	Marion Bell	Findlay.
Hardin	Andrew Dodds	Bellecenter.
Harrison	George A Martin	Cadiz.
Henry	John H. Lowry	Florida.
Highland	N. B. Upp	Rainsboro.
Hocking	Frank Adcock	Logan.
Holmes	R. J. Chapman	Killbuck.
Huron	A. McDonald	Norwalk.
Jefferson	W. O. Reynard	Dillonvale.
Knox	John Cunningham	Gambier.
Lake	N. C Frost	West Mentor.
Licking	J. Willis Fulton	Newark.
Logan	E. P. Chamberlain	Bellefontaine.
Lucas	M. P. Sanderson	Berkey.
Madison	L. W. Kilgore	London.
Mahoning	James S. Price	Youngstown..
Marion	J. A. Knapp	Marion.
Medina	C. O. Van Deusen	Medina.
Meigs	John B. Lindsey	Pomeroy.
Mercer	S. J. Vining	Celina.
Miami	W. F. Robbins	Piqua.
Montgomery	S. D. Bair	Dayton
Morgan	J. M. Anderson	Eagleport.
Morrow	E E. Bunker	Marengo.
Muskingum	R. Y. White	Chandlersville.
Noble	John McWilliams	Sarahsville.
Ottawa	W. A. Cooper	Gypsum.
Perry	John Meenan	New Lexington.
Pickaway	Frank Beatty	Orient.
Pike	W. H. Patterson	Piketon.
Portage	A. A. Galbreath	Mantua.
Preble	Samuel Miller	Eldorado.
Putnam	A P. Sandles	Ottawa.
Richland	W. H. Shyrock	Mansfield.
Ross	W. J. Parrett	Lyndon.
Sandusky	A. W. Overmyer	Fremont.
Scioto	W. McGeorge	Mt. Joy.
Seneca	Morgan E. Ink	Republic.
Shelby	Martin Quinlist	Sidney.
Stark	J. J. Snyder	Paris.
Summit	L. M. Kauffman	Clinton.
Trumbull	Albert Brown	Warren.
Tuscarawas	J. H. Karns	New Philadelphia
Union	Homer Southard	Marysville.
Van Wert	A A. Giffen	Van Wert.
Warren	A. D. Smith	Lebanon.
Washington	J. L. Jordan	Marietta.
Wayne	G. J. Ebright	Shreve.
Williams	Jacob Faber	Bryan.
Wood	E. A Underhill	Perrysburg
Wyandot	Z. T. Smith	Upper Sandusky

President Bailey announced further committees, as follows:

Credentials: Hon. R. M. Eaton, Belmont County; E. T. Blackburn, Scioto County; J. A. Knapp, Marion County.

Resolutions: W. H. Hanna, Wood County; Reuben Rankin, Fayette County; C. A. Graham, Allen County.

The chair further stated that these committees would be expected to report at the beginning of the afternoon's session.

Music by the Cecelian Ladies' Quartette.

President Bailey: Ladies and gentlemen, I take it that the greatest and best product yet produced is intelligent Ohio manhood—except intelligent Ohio womanhood and motherhood. I have been cornered for several days here with a number of representatives of the boards of health of the different cities of Ohio, and of the National government; with scientific men with prefixes and affixes to their names, and we have been discussing—I have listened to them discuss—contagious diseases among our live stock; and they have been using such terms as "bacteria," "bacilli," "germs" and a good many other unpronounceable names that I cannot repeat; so that my mind became so much filled with those terms and what they represented, that I could see germs, bacteria and bacilli in my dreams; and at the restaurant even the food that was brought before me seemed infested with millions and millions of those things, all crawling about and engaged in a warfare of extermination. The picture of the Battle of Gettysburg depicting the tremendous destruction of life there, as shown by the painter on his canvas, was nothing compared with the destruction that was going on in that mess of grub that was set before me. (Laughter.) I was over in Dr. Probst's office yesterday afternoon, engaged with a lot of those professional gentlemen, and I saw that I must get away from there in some way or another, my mind was not capable of holding all those things; I was getting "daffy." So I hied myself over to the governor's office and had a talk with the Governor. You cannot tell that the Governor is a farmer; some of you do not know that he is a farmer; but I have found out that the Governor is a farmer, and I have found out that he is a good farmer. (Applause.) I tell you I learned some things over there I never learned anywhere else about farming, and about stock raising; and another thing, I learned more in half an hour's talk there with the Governor about controlling contagious diseases than I had heard in three days. (Applause.) In fact, he informed me of one thing I do not believe that you gentlemen know, for I didn't know it before, and it was a matter of such vast importance that I will say to you that when I left his office, I felt that his duty in the future would be going around out in the hog raising sections of Ohio and telling the people in those counties how to prevent their hogs from dying of hog cholera. Now he gave me a remedy for that, and I was sizing up the gentlemen as to whether his duty was in the Governor's chair or out controlling contagious diseases on the farm. (Applause,) I could not permit my mind to believe that we could spare him from the Governor's office, because we cannot; but I got relief after a while; after I had left him I ran across my good friend, Tom Harmon, of the National Stockman. In conversation with him he suggested to me the identical remedy that the Governor had offered for the prevention of hog cholera, namely, stirring the hogs around, getting them up when they are being fed and moving them around, making them exercise. The Governor said that since he had begun that he had never lost any more hogs with the cholera.

Now without intimating to Mr. Harmon what the Governor had said, it was a strange coincidence that Mr. Harmon should suggest the same remedy. Of course, I could not fall into conversation with him about anything else than contagious diseases, because I have been talking about them for a week; so the matter naturally came up, and he said, "Bailey, did I ever tell you about my experience in hog cholera, about how I cure hog cholera? When I was a boy fifteen years old my father had a great many hogs dying almost constantly from hog cholera, and I and my brother had to drag their carcasses over to the wood lot and burn them, and it was an awful job. So brother and I, whenever we found a hog getting sick with the cholera, concluded that we would just drive that hog over and let him do his own transportation. After subjecting the hog to that process of driving he generally got well."

Now that is the remedy, if you will accept it from me as I got it, and as no doubt it will be effective, we will retain the Governor in the office for two years more. (Laughter and applause.)

Now, gentlemen, I will not detain you any longer. I take great pleasure in presenting to you General Andrew L. Harris. (Applause.)

ADDRESS.

BY ANDREW L. HARRIS, GOVERNOR OF OHIO.

Mr. President and Gentlemen of the State Agricultural Society and the County Agricultural Societies of the State of Ohio: I believe that on this occasion representatives from the different agricultural societies are here for the purpose of getting as much information as they can in regard to the best way of conducting agricultural societies. I want, in the beginning, to congratulate the State Board of Agriculture for the increasing success it has had in the few past years. I do not believe that there is an agricultural society in the United States that is more prosperous, that is giving better satisfaction, and that has a greater share of the confidence of the people than the Agricultural Society of the State of Ohio. I heard that expressed particularly last fall, when I happened to be on the program in welcoming the different organizations to the Agricultural Society meeting during the Home Coming Week, by former citizens of Ohio who have now taken up their abode in other states. They all expressed the very highest appreciation of the development that Ohio had made, and they were particularly proud of the grounds that we have here in Columbus for the meetings of the State Board of Agriculture. I do not want to tell those gentlemen all that I did hear from those Ohioans who had come back to see it, because they might feel that they had reached perfection, and they might not take so much interest in the future. I do not want them to feel that way, because however perfect they may be at the present time, there is still room for more work, more progress, more development, and the making of our Agricultural Society of the state better and better each year.

I hear also the very best reports from the County Agricultural Societies; and there, after all, is where the people most frequently come together, and most frequently show the development of the state, because each locality is striving, of course, to do the best it can in the way of exhibiting what progress has been made from year to year in good stock, in good grain, and good citizenship; because if our county agricultural societies did nothing else than to furnish the opportunity for an annual reunion, they would be worth a great deal to the farmers, who come there regularly for the purpose of meeting old faces and recalling incidents of years gone by, as well as to exchange opinions as to the best methods of raising stock, the best time to sow wheat, the best breeds of wheat and of corn and of other grains; so that it is worth a great deal to them, even if they do not see all of the stock that is on exhibition; but when they visit the pens where the stock is on exhibition and see the ring where the horses are shown, it is also beneficial to them. I have never taken as much stock in the speed ring as some people do; the fact is that I do not go to the speed ring until I have seen other portions of the fair. I think sometimes that the speed ring does not belong, after all, as much to the Agricultural Society as a great many people think it does. To be sure it attracts a great many people, but after all, it is not of so much benefit to the practical farmer as it may be to the gentlemen who like to drive pretty rapidly. The most of the farmers are getting through the world about as fast as they want to go, even with their ordinary driving horses; and I do not believe that they are so especially interested, except that natural appetite they may have sometimes to see which horse is the best in the way of speed, or something of that kind.

Now before I go any further, as your president has intimated that possibly I am an expert on hog cholera, you might go away thinking that I have some patent medicine. Now I have not—I have no patent medicine at all. I have tried patent medicine, I tried the profession of medicine, I tried veterinarians for fifteen years, and every year I saw my hogs killed off by cholera; but finally I came to the conclusion that possibly if I would apply a little common sense, it would be just as good as to be calling in so many veterinarians or to be applying every remedy that one heard of; and I applied common sense, and for fourteen years have not had a hog die of cholera that I know of. Once in a while we lose a hog, that is true, but that was the case long before I ever knew of such a thing as hog cholera. From my boyhood I remember very well that when we put up our hogs to feed, we expected to lose a hog now and then. It is natural for a hog to die, the same as it is with other live stock, the same as it is with the human species; and sometimes they do die and I lose a hog now and then, but so far as I know, for fourteen years we have not lost a hog from hog cholera, and during all that time I have not called in a veterinarian. I have not used any remedies that are said to be "sure," but have just simply applied common sense, have given them pure water to drink, pure food and plenty of sunlight and exercise. If a hog gets sick I usually take it out, if he has a contagious disease, so that he will not infect his fellows, and usually, in a day or two he is in condition and is put back. But I take him out as a matter of precaution, and I am rather inclined to believe that it is no use for me to doctor a cholera hog; the more medicine you give them the sooner and more sure they are to die. I found that to be the case even before I quit doctoring, that it is best to take them away some other place and look after them a little and let them be, and not bother them by turning them over on their backs and drenching them with some kind of remedy that somebody had come along and sold to me at three, four or five times its actual value. I believe that if my farmer friends will practice that, they will find it just as safe a plan to follow as if they were to use every remedy that comes along. I am not saying that my hogs are proof against cholera. Cholera might attack them tomorrow for all that I know. It comes and goes. But what I wish to say is, that for the last fourteen years we haven't had any hog cholera, and I think that common sense has had as much to do with it probably as anything else. I know that medicine has not had anything to do with it, except that we use a little copperas. We use ashes and common home remedies for the purpose of keeping the hogs healthy. If you do that I believe you will be just as safe as you would be if you were constantly experimenting with some remedy that somebody comes along with and offers to sell at a big price. I know how natural it is to buy cholera cures. Just as a person when sick is willing to buy almost anything, take every chance on almost anything in the hope of getting well, so it is perfectly natural that when one's hogs are sick that they will go to drenching them, or punishing them by giving them medicine. Everyone knows, who has had any experience with hogs, that they are peculiar animals—very peculiar indeed—and it is the hardest thing in the world when a hog is sick to get it to take medicine, unless you force it; and sometimes when a hog is being drenched, after being let down he dies at once; just because it is so hard to force any kind of a liquid into a hog without danger of its getting into the windpipe or some place else; at any rate his death is pretty sure to occur. The only advantage that I can see is that such a course will put the animal out of its misery perhaps a little sooner when perhaps it has to go anyhow. I merely make this by way of explanation. It is called out on account of your president having introduced the subject, and I did not want you to go away thinking that as soon as I got out of office I was going to start out selling some kind of a remedy for the purpose of curing hog cholera. (Laughter.)

I wish to congratulate the farmers of Ohio upon the very healthy financial condition they are in. I cannot say as much on that head as I said a year ago, because the farmers of Ohio probably are not quite as prosperous as they were then. In the first place, the product of the fields, as a rule, was not as great last year as it was the year before. With oats and wheat the price probably makes up what is lacking in quantity, so that you are not falling behind so much on that account. On the other hand, the corn in many sections of our state made the best yield that probably has been made for several years, but I find in many places that the corn did not dry out well, and is not yet fit for market. That is the case I know with us. While we raised a very good crop of corn. It is not doing well even in the crib now, and I do not know what the result will be as to some of it. Although our corn was very carefully sorted, our boys tell me that it is not doing well notwithstanding. In other portions of the state the yield evidently was not so great, and in traveling about I have reached the belief that if our farmers in some of the flat sections would underdrain more, they would be in better condition to resist the element that seems to be the most powerful that we have to contend with this year; namely, too much cold rain. Wherever the ground was well under-drained, notwithstanding the fact that we have had so much wet weather, I have noticed that you had very good corn. In many places in Ohio not far from the central portion of the state, I saw many fields in which there were wet places and the corn did not amount to anything. They could not get in to till it, in fact. Now I believe such land, in a year like this, would have paid the cost of under-draining, if the farmer had only taken the trouble and expense of under-draining previous to this year. Now that should demonstrate to him that he should under-drain in the future, and I want to say that probably there is no expense put upon a farm that will bring better returns than under-draining. Then there is a satisfaction in having your land dry; you do not have to wait until the low places naturally dry up. The water is taken off and you can get into other portions of the field more quickly, and the low places do not interfere. This is merely a part of my observation, and it comes to me as a thought since I have gotten upon my feet, that the farmers of the central part of Ohio—and I might say in some other portions of the state—are not paying a sufficient amount of attention to under-draining. I do not mean to say that you must under-drain in an exactly scientific way. I have never followed that, so far as I am concerned. I have felt that if I could get the surplus water off it would be sufficient. Yet it might be that scientific under-draining, after all, will more than pay; I can't speak as to that, but I do know that no money is better invested in the case of low land than that which is invested in the way of under-draining. I want to say again that my experience has been that you want to put your tile well down, you want to use large tile; do not put in any two-inch tile or any three-inch tile; do not put in less than four-inch tile, even in your lateral drains. Be sure that you have large enough tile for all of your main lines.

Now I had nothing prepared this morning and I do not want to detain you. What I am saying is what has come to my mind while on my feet, except that there is one subject that I want to merely call your attention to. I feel that it is one of the most important subjects the farmer has to consider at the present time: that is the question of taxation. I know there is a difference among our farmers as to the best system of taxation. It is a matter that I have thought of a great deal, for taxation, like death, is always with us. Tax-paying day comes regularly twice a year, and we sometimes feel that there is a disposition on the part of one industry to throw the burden of taxation over on to another.

A member of the Tax Commission, that has been in session for the last fifteen months, told me the other day that if he could only apply all the advice that had been given to him from the time that the Tax Commission began its sessions, that nobody would have to pay any taxes. (Laughter.) Each industry wanted to throw it off on the other, and of course, if each industry could do that, then each industry would go tax free, or substantially so; and that was why he had come to the conclusion that if he could only adopt the ideas of all, that nobody would have any taxes to pay.

I know that we have all been very much wedded to the constitution of the State of Ohio in regard to taxation. I am one of those who, until the last few months, felt that there was probably no necessity for an amendment to the constitution in order that we might have more equality in taxation; and when I appointed a commission some fifteen or sixteen months ago to go over the tax laws of the state and see whether they could not be amended in a way that they would more equally impose the burden of taxation, I particularly instructed that commission to try and see if this result could not be had without an amendment to the constitution; and every member of that commission was appointed with the idea that he would, if possible, find a method of raising revenue without an amendment to the constitution. I worked along with them in an indirect way; in other words, I took up the subject of taxation and studied it to some extent, particularly with the interest of the farmer in mind, because the property of the farmer is always open to the vision of everyone, and if there is any property that must stand its share of the burden of taxation, under the present rule, it is the farmer's property. He cannot avoid it. His property is apparent to the eye, so that it is utterly impossible for him to avoid its taxation.

Now Article 12, Section 2, provides a very reasonable and apparently just provision for the taxation of property; namely, that the legislature should provide for uniform laws for taxing moneys, credits, etc., including real and personal property, at its true value in money. Now that has seemed to be very straight and very wise, and apparently equitable; and I have always felt, till within the last few months, that there was a possibility of retaining that principle in the constitution, and still by a classification of property, be able to reach classes of property that we are not reaching at the present time, and some that we are reaching by an excise tax that brings into the treasury of the State of Ohio today nearly two million dollars, although the probabilities are that if it was tested it would be declared unconstitutional.

Now with the thought before that commission that there would be a reduction, in all probability within the next year or two, of at least two million dollars in the income of the past year in the general revenue fund, it seemed that now, when we had a sufficient amount in the treasury on hand, that it was well enough to begin to look out for the future; and with that object in view, the commission that I spoke of went deliberately to work pursuing every avenue of information on the subject of taxation that was open to it, and there was a great deal open to it. There is a vast amount of literature upon the subject of taxation. Many, many essays have been written upon it. Many books have been written upon it. So they have followed every one of those avenues for the purpose of getting the very best information that it was possible to get. In addition to that, they called before them representatives of the various associations representing the various industries of the State of Ohio. In addition to that there was held in the city of Columbus this last fall one of the largest and most representative meetings to consider the subject of taxation that has ever convened in the United States, and that was the National Tax Association Conference, in which the best thought was presented by experts, men possessing large experience and knowledge of the subject. They came from nearly every state in this Union to interchange opinions as to the best and most equitable way of raising taxes to satisfy the needs of the state governments. When I say that this gathering was one of the largest and best of its kind ever held, I say it without fear of contradiction. The conference heard reports of committees, essays and addresses, followed by discussions, and there was a consensus of opinion that the uniform rule for the taxation of property at the present time was unjust to the tangible property, and that there was a large amount of property falling under the general classification of intangible property that should be taxable by our laws which we do not get on the duplicate for taxation, such as franchises, notes, moneys, stocks, bonds, etc.; and it was the consensus of opinion, after all these men from these different states had considered carefully every aspect of the subject, that the uniform rule was a failure; that the uniform rule of taxing property according to its true value in money was all right at one time, nice enough in theory, but did not work out in practice.

Now I do not want to read an essay, I am not going to do that, but I do want to call attention merely to a few facts contained in this report. I am not going to read very much of it, either. I say now that the uniform rule of taxing property according to its true value in money, even in the state of Ohio, where our organic law demands it, is a failure. That, I know, is a broad assertion; but if you gentlemen will read the report of this commission—and I hope that the legislature will authorize a large number of copies to be printed so that they may be distributed all over the state of Ohio, and every intelligent taxpayer may have one to read and to consider—I believe that you will be amazed when you see some of the statements contained in that report. I believe, also, that you will feel that there can be no question as to the truth of the statements made.

Now suppose we consider the matter of lands; there is no uniform valuation of lands in the state of Ohio. There may be uniformity in counties, but after you leave the counties that uniformity ceases. And when a tax is levied upon the entire property of the state for the purpose of raising revenue to meet the demands of the state, the county that has the higher value for taxation upon its lands and its other property pays more than its share; while the county that has the lower valuation pays less than its share. But you say that we have a State Board of Equalization for the purpose of equalizing the valuations of the different counties. That is true, but that State Board of Equalization is elected by districts and, as a rule, the individual members of that board feel that they must protect their own districts; so that if the valuation of the member's district is low, he does not propose to see it raised; and if, on the other hand, the valuation of a district be high, the men representing it cannot get it cut down for the reason that the other districts enjoying a lower valuation are not willing to take on an increase in order that the district having the higher valuation may be reduced, and the result is, that after a considerable expense to the state of Ohio, the State Board of Equalization is not in a condition or able to give relief.

I want to say here, for fear that you might misunderstand me, that there would be naturally a difference in the valuation of real estate in the different counties; that is true, and that we must take into consideration. The value of real estate follows farm lands in direct relation to the amount of profit that is derived from them, in the way of dairy products, in the way of raising live stock, in the way of raising fruit. There is scarcely any land in the state of Ohio that is not profitable along one line or the other. It is therefore the earning power of the land that should be taken into consideration when determining the value of the land; and if you will look, even at the report of the auditor of state, you will be surprised when you see that the farm lands in some counties are appraised at so much less per acre than the farm lands of other counties. When the representatives of these latter counties are extolling their sections, they will tell you how valuable their farm productions are, how productive their land is. But when it comes to the matter of putting a taxing value upon it, then some way or another, the land immediately begins to depreciate. That is unfortunate.

Now live stock even is not valued in every county in this state alike. There is a difference in that respect, and this difference appears even as to townships in the same county. But as a rule, there is an effort made by the assessors to have a uniform rule for the valuing of live stock, and they usually meet at the auditor's office for the purpose of having an interchange of opinion and receiving instructions as to the rule which they will apply in fixing the average value of live stock. In that way they do, to very great extent, succeed in equalizing valuations within the counties, but as to the different counties as compared with one another, you will find a different condition of affairs.

Now I do not care to go further. I want you to read this report. I do not want you to make up your minds that the report of this commission is wrong without having read the report. I want you to read it carefully, and also the constitutional amendment that they propose; and while you might feel that possibly there is not a sufficient amount of restriction—when I read it first I thought probably there was not, but when I read the report again carefully and the recommendation that they make for a constitutional amendment, I did not hesitate to give it my most hearty endorsement to the legislature —and every time I read it over I feel that I did right when I gave it my strong and hearty endorsement.

I want to now just refer to the matter of intangible property. I want to show you the injustice of the present method of taxation of intangible property, such as credits, moneys, bonds, stocks and that kind of property that you can carry in your pocket, that kind of property that the assessor cannot see when he comes around; that kind that is upon your honor to give in; and we must all remember that when we make out our valuation of property to the assessor, we swear to it, we enter a solemn oath that we have given in all of the property that is required to be taxed by law. But now I want to see whether or not we do. I want to compare a couple of counties, that's all, and see whether or not it is an actual fact that we do always give in all that is expected of us to give in.

I am going to take now the county of Hamilton, the richest county I suppose in the state. Now I do not want some Cuyahoga County man to rise up and say that I am mistaken; I do not want that, because the two counties are so nearly alike that I simply take Hamilton County because it is down in my section of the state, and I know more about it than I do about Cuyahoga, that's all. I want to compare Hamilton County with my own county. Hamilton County is a rich county, we will all admit that. Hamilton County has many industries of various kinds in the city of Cincinnati, there is a wonderful trade and there is a vast amount of wealth, we will all admit that. Even Cuyahoga County will admit that.

I want to compare Hamilton County with Preble County, which is purely an agricultural county. We have no manufactories of any kind in the county. We have no mines in the county. If there is a county in the state that is a purely agricultural county, I believe it is Preble County. We have nothing in the world to bring money into Preble County except for products of the farm. We have a little bedstead factory and a little glove factory, but these are very insignificant when compared with the big factories in such a city as Cincinnati—little factories that will give employment to 25 or 30 men. Therefore, I say that we are purely an agricultural county. Now on the subject of intangible property, in the county of Hamilton the amount credited, after deducting debts listed for taxation in that county, is $1,676,735, in that great county of Hamilton! Suppose we go over to Preble. That little county has only 23,000 population; Hamilton County has twenty times as much. I am not now undertaking to draw a contrast to the detriment of Hamilton County at all; I am only now using this as an argument for the purpose of showing that so far as the taxation of intangible property is concerned, that our present constitutional provision seems to be a failure. Go over to that little, poor county of Preble—that even does not furnish great men—and we find that the amount of credits in the county of Preble is $2,169,000 ,as compared with Hamilton County's $1,676,735, with all her immense business! This is a matter of record. I take this from the auditor of state's report. Therefore, my Hamilton County friends will not find fault with me when I call the attention of this intelligent audience to that condition of affairs, with the comment that there is something wrong some place; it is either the fault of our tax laws under our constitution—because everything has been done to bring this intangible property on the tax duplicate that possibly could be done—or it is the fault of the consciences of our friends in Hamilton County, or else Hamilton County is not as rich as we might suppose.

Well now, take up the matter of bonds. I do not pretend to say that Preble will be equal in bonds; but when we recollect that Preble has two million dollars of credits to Hamilton's one and one-half millions, you will see that there must be something wrong. The bonds reported for assessment in Hamilton County amount to $1,479,000, while in Preble County it is $26,000. I am not sure but what I could name three or four men in my own town of Eaton who own more than $26,000 worth of bonds, but that is what the assessor gets. The amount of money in Hamilton County is $1,258,000; the amount of money in Preble County is $895,000. Why, I think that if you would examine the report of the two national banks in Eaton, you would find that they are carrying more deposits at the present time than is here reported for the entire county of Preble, and I think we have ten banks in the county. So you see that the two banks in Eaton alone have more money on deposit than is reported for assessment in the entire county. So I am not claiming now for Preble County that it is so much more honest than other counties; I am not claiming that; but what I am claiming is, that there must be something wrong some place, or else there would be more reported in the city of Cincinnati and county of Hamilton than we have been able to find.

The amount of intangible property found upon the duplicate in the county of Hamilton aggregates $4,334,000, while the amount of intangible property in Preble County is reported as $3,091,000. Subtract one from the other and you have the difference of $1,243,000. The little county of Preble, with a population of 23,000, reports this comparatively larger amount as compared with Hamilton County, that has twenty times more inhabitants and probably fifty times as much wealth. Is there any more striking evidence than that the taxation of property, intangible property particularly, by a uniform rule at its true value in money, is a failure? I believe that these differences will be found in almost every agricultural county; and therefore, I say to the farmers everywhere, we believe that under present laws you are bearing more of the burden of taxation than you should be required to bear; and I say again that I hope you will read the report of this commission carefully before you make up your minds that you cannot listen to any suggestion or think of changing our present constitution in order that the burden of taxation may fall more equitably upon all.

Now I do not know that I care to go any further. I am only saying this, hoping that you will take my advice and read the report of this commission, because it is an exhaustive report. It not only brings to the surface the figures that I have stated—and which I have stated in a slightly different way—but it brings many other figures together that you will be surprised to note; and I believe that if you will trace them down, you will find that they are taken from the most authentic sources. And I understand and appreciate that our present constitution has taken such deep hold in the minds of many of our farmers, that they do not want to think of amending it for fear that any change may place a greater burden of taxation upon them. Well, that matter cannot be made much worse than it is now. It cannot be much worse for the agricultural counties than at present. I, for one, am willing to take the risk. I am not one of those who believe that every man who goes to the legislature is an object of suspicion. I have been connected with many legislatures in the state of Ohio; I began as early as 1866, and from that time until the present, at intervals at least, I have been connected with the legislature; and I will say that I believe that Ohio can trust her General Assembly. (Applause.) If you cannot, it is your own fault; they are your representatives; they come here by your own vote. If you feel that they are not quite what you expected, it only indicates that greater care should have been used by you in your selection.

I believe further, that it is the duty of every man, it makes no difference how much his business might suffer, if his constituents want him to come to the legislature, he ought to come. I know that I have never made any money by coming to the legislature, either directly or indirectly (Applause); I would have been better off if I had not come; but both times when I came to the legislature—or the three times that I came to the legislature—I came really over my own protest; but I was willing to come because I felt that I was able to come, so far as that was concerned—I do not mean to say I was able mentally, particularly, but I do mean to say that I was able to stand the expense of coming and doing what I could in the way of legislation for the people of the state of Ohio; and I believe that it is the duty of every good citizen when the call is made for him to come to the legislature, for him to answer that call; and I think if you will come to the legislature and sit with these gentlemen and watch the progress that they make while they are performing their official duty, that you will come to the conclusion that they are a pretty good set of fellows after all, that they do not come here for the purpose of robbing you nor for the purpose of looting the treasury. There is scarcely a man that goes to the legislature who could give his entire endorsement to every act that the legislature puts into law; you must not expect that. Where there are over one hundred members of the House and thirty-seven members of the Senate, as there are at the present time, you could not expect that every act would meet with your entire approbation, because there must be an interchange of opinion; but if you are there you have the right to register your disapproval or your approval of everything that the legislature does.

Now so far as I am concerned, although I have the veto power, it is true, still I do not feel that the executive should interfere too much with the legislative; neither do I feel that the legislative should endeavor to pass laws that cannot fail to be declared unconstitutional. I think, as a rule, the legislature is very careful to observe its oath, to obey the constitution of the United States and the constitution of the state of Ohio. I think they feel that they have taken that oath conscientiously, and intend to live up to it; and I want to say again, that I have always had faith in the Ohio General Assembly, and I have now; and while I might differ sometimes with something that they may do, I feel that is an honest expression from the members recorded by their votes, which go upon the journal and make a record for you and me to read. If there is anything to criticise in that record, you can hold them responsible; but if you are charitable, I am inclined to think that you will not be disposed to lay the heavy hand of criticism on the legislature too severely.

I have detained you longer than I had expected to do. I would not have entered upon this question of taxation at all had it not been that I desire—and I hope I may say here I hope—that there will be a sufficient number of copies of the report of this commission ready for distribution so that each gentleman here can have one to take home with him to read and think about carefully. Remember that that commission was an honorary one, composed of gentlemen who served voluntarily and who received no salary. They came at my request. I know some of the farmers have said: "Why did you not appoint a farmer?" I will tell you why. I thought when I appointed that commission that I could find a way to avoid the necessity for an amendment to the constitution; and it was with that object in view more than any other that I appointed the commission; but when it got away along in its investigation, it was found that it would be impossible for it to get the relief that it hoped for without an amendment to the constitution, and I was ready also to admit the same thing. While I possibly might have worded the constitutional amendment just a little differently, I do not believe that my wording would have been better than theirs.

In conclusion, let me again say to you, gentlemen, that I hope you will embrace the first opportunity to read that report, and see whether you will not come to the conclusion that, after all, the uniform rule of taxation at the true value in money, which has obtained in the state of Ohio under our present laws, and under our present constitution, is a failure. I thank you. (Applause.)

President Bailey: If any of you had any doubt on the subject of the Governor's being a farmer, I apprehend that you do not have any such doubt in your mind now; but there is one question I would like to ask the Governor and that is whether this remedy that he applies to hogs of dragging them around to cure hog cholera can be done by proxy, or whether the owner has to do that. (Laughter.)

Governor Harris: If the president will allow me to answer that, it is always safer for the owner to see that it is done.

President Bailey now delivered his address

ADDRESS OF HON. L. P. BAILEY.

The legislature has by statute fixed the first Thursday after the second Monday in January of each year as the date for the annual meeting of the State Board of Agriculture. In compliance with this law we are here today. The State Board of Agriculture proper consists of ten members, two of whom are chosen annually, each to serve for a period of five years. This annual meeting as designated by statute is a delegate meeting, composed of the presidents of the county agricultural societies; provided, that in counties having no agricultural societies, the presidents of the Farmers' Institutes are authorized to choose delegates to this annual meeting. So, gentlemen, you are here today a part and parcel of the State Board of Agriculture. As the ten active members are in front all the year, you are expected to put on your armor today; "speak out in meetin';" let your wants be known, right wrong and suggest good. All other meetings of the board, except this annual meeting, are at the call of the president when the business of the board seems to demand it.

The work of the Board of Agriculture has greatly increased of late years, and now perhaps no other department of the state has so many and such diversified interests and responsibilities, with its seven separate divisions, any one of which is now of sufficient importance to our people to justify a separate board for each.

DIVISIONS.

First, perhaps, in importance are the Farmers' Institutes. The revised statutes provide that not exceeding four institutes can draw funds from the county treasury during any one year for the expense of same. Each institute draws $31.25 hence each county may get $125. The president of the State Board of Agriculture may draw from the county treasury of each county holding one or more institutes, $125 for the purpose of paying salaries and expenses of the lecturers. Last year 298 institutes were held under the auspices of the Board, 40 lecturers were employed and an aggegrate attendance of 92,303 is reported. Twenty-three independent institutes were reported to the board, with an attendance of 9,230, costing $1,101.34. Local expenses of all institutes drawing funds from county treasuries, $8,882.77. The amount drawn for per diem and expenses of lecturers, $11,000, making a total cost for the 298 institutes of $19,882.77, or $63.66 for each institute. Per capita cost for attendance about 21 cents, or 4¼ cents per session. This year arrangements have been made for 330 institutes—32 more than last year.

Our institute lecturers will compare favorably with those of any other state as to ability, adaptability and results accomplished. The Ohio institute idea is developing, for it is educational, imparting facts and experiences our farmers need to know. It places upon them the responsibility of conducting the meetings, thus familiarizing them with parliamentary rules, expressing of themselves in public and aids them in order that they may aid others. This system is developing and drawing out from among the farmers many capable men who have a message for their fellow farmers. Other states, seeing this, are drawing from Ohio many institute workers. Last year, before the institute season opened, all the institute lecturers were called to Columbus to take part in a meeting in which a round table of experience was conducted, everyone participating, resulting, we believe, in much benefit to all. This year a two-days' meeting was held consisting in part of lectures by Director Thorne, of the Ohio Experiment Station, and Prof. Vivian, of the Ohio State University, on the subjects of technical knowledge of fertilizer applications, growth of plants and soil fertility, giving to our lecturers the latest and most reliable results of experiments on those important subjects. Dr. Brown led the discussion on live stock breeding, feeding and care; Wm. Miller on orchard and garden needs, all of which drew out lively discussions. We believe everyone in attendance took some part in the discussions. It was unanimously voted to hold a three-days' meeting next year. These, I believe, are giving our lecturers renewed inspiration, and they are going to their work with higher aims than ever before.

OHIO STATE FAIR.

Next in order of importance is the state fair. Heretofore noted for its high standard of excellence, this years far surpassed all former expositions, owing in part to the home coming feature and the very earnest work and cooperation of everyone connected with its management. A nicely printed invitation was sent to all former Ohioans whose addresses could be obtained. This brought to our borders thousands of native Buckeyes who had strayed from the fold, to mingle with former associates, reviving old memories of days gone by. This was perhaps the greatest homecoming and most solid visiting event in the history of our people. The success of this feature was beyond our fondest hopes. The fair in every department was equal to or greater than on any former occasion. It seemed our people vied with each other in the effort to excel.

We dedicated the splendid concrete and steel grand stand, costing about $50,000, so generously appropriated by our last legislature. I want to say to you, governor, we did not exceed the appropriation in the cost of its erection, and we take great pleasure in presenting to you, as chief executive of our great state, the most substantial and convenient grand stand in America today.

In addition to this, we built last year with funds accumulated from the proceeds of the fair, a Women's Rest Building of pleasing appearance, costing about $5,000, equipped with couches, rocking chairs and a complete children's nursery, with competent and accommodating nurses in attendance. Mothers could leave their children here without cost, and tired women could here find a place of rest with the comforts of home. This feature attracted mcuh attention and was greatly appreciated.

The fair was in every way a brilliant success. Gross proceeds were $20,000 more than any former fair, net proceeds about $10,000 above any former fair. This is due to much larger premiums being paid. The policy of the board is to secure every equipment for convenience of both exhibitors and visitors, then, just as fast as our funds will permit, increase the premiums. We agree with the exhibitors that they make our fair and we are determined to give them adequate return.

I am refraining from statistics in this address as the field is so large. My aim is to do with policies and motives, yet I cannot pass this part without giving you some of the comments of the press regarding the state fair of 1907, comments that stirred the hearts of every member of our board and those connected in any way with the management. The grand success of the Ohio State Fair should be the pride of every citizen.

Editorial Ohio Farmer: "By way of preface it can be said quite truthfully that the Ohio State Fair of 1907 was the greatest ever held. We might go so far as to say that it was the greatest agricultural and industrial exposition ever held on this continent, barring some of the great World's Fairs. The Ohio State Fair Grounds are the finest in America; this is generally admitted. The buildings are made of stone, brick, iron and wood, with slate roofs and plenty of glass to let in the light. The new exposition halls, especially those for the live stock and machinery, are ideal from the standpoint of both exhibitor and spectator. The grounds are beautiful and the buildings conveniently grouped."

Editorial American Agriculturist: "Agricultural Hall in the Ohio State Fair last week was filled with one of the finest exhibits of farm products ever seen in any state. It seemed as though farmers tried to outdo themselves. Homecomers and visitors were loud with praise for such a splendid showing of vegetables, grains and grasses. D. K. Bell, from New York, stood in amazement as he entered the hall, and declared such a beautiful exhibit of farm products had never before met his eye. It was an exhibit of which any state could well be proud. From floor to ceiling was a brilliant array of as choice a lot of products as man ever grew under similar conditions. There were seven county displays and each exhibitor put up his very best. The character and standard of farm products was higher than at any state fair we ever attended."

Editorial National Stockman and Farmer: "The Ohio State Fair of 1907 was the greatest success of any exposition ever held by the Ohio State Board of Agriculture. Although the Buckeye State has claimed the honor of the greatest state fair in the Union, it exceeded all former efforts this year, both in exhibits and attendance. One woman noted that the Ohio State Fair is a clean fair; a safe place for children to attend so far as moral influence is concerned; that there is never any liquor sold on the grounds; that there is no gambling or anything except of an elevating nature and that appeals most strongly to the mother. Time spent by women at the State Fair is time well spent. The rest rooms, where mothers could rest or leave their babies while taking in the sights, should certainly have been appreciated."

The editor of the American Agriculturist, in a personal letter to the president, said: "I say without hesitation that Ohio produces the best of all-round agricultural fairs of any of the states and it is always a pleasure to me to attend and watch the progress from year to year. Never has a fair impressed me more than this one as a substantial, educational feature for the benefit of all the people. I want to congratulate you upon the splendid way in which all the departments were conducted."

I am pleased to inform this convention that our board has decided to build this year a Men's Rest Building, which will include reading, smoking and lounging rooms, lavatories, bath rooms and barber shop. Also a nurse-cow barn, for the purpose of housing the nurse cows that have heretofore detracted from the excellent appearance of the exhibition stock by being mixed in with them or tied on the outside of the stable. Also covered walks between various exhibition buildings. We contemplate an educational building, wherein the Experiment Station and Ohio State University exhibits can be shown separate and apart from other exhibits. This building should contain a large lecture room for demonstration and lecture work. We also need in the near future a new Women's Building to meet the increasing demands for space for textile fabrics and domestic manufactures, including a department for demonstrating domestic science work.

With these improvements and with the largest exhibit of live stock, farm products and farm implements, our attendance consisting of the highest class of intelligent christian people; our grounds the most free from objectionable features, we feel that we will be far in advance of any other fair in the Union. I cannot see how our citizens, young and old, male and female, hoping to make the best of life, can afford to miss this exposition, which cannot fail to make the farmer and his wife think better of their calling and themselves; instilling into the minds of our youth a desire for farm life; showing the city dweller that the farm is the source from which our best citizenship comes. The Ohio State Fair has for many years been conducted on this high moral plane and is one of the most successful fairs from a financial viewpoint. This I wish to emphasize, so as to convince managers of other fairs that they can have agricultural fairs without the many gambling and immoral features to separate the youth and indiscreet older citizen from his cash and character.

The Homecoming and other new features this year caused much extra work for the management. I wish especially to thank the Board of Trade of Columbus for its earnest co-operation; the business men and citizens of Columbus for their magnificent decorations; the hotels and private houses for throwing open their doors and bidding a joyous welcome to all, and the press of Columbus and the state, for its liberal notices before and during the fair. The many thousands of visitors to the fair were astonished at the wonderful growth and magnitude of the manufacturing and commercial interests of our Capitol City. The goodfellowship developed this year between the Columbus Board of Trade and the Ohio State Board of Agriculture I hope may continue and grow stronger as the years go by. We need the co-operation of the city of Columbus. We cannot place the Ohio State Fair in a class above and beyond that of any other state fair or exposition without this aid. To the citizens of Columbus I will say that we believe the Ohio State Fair is the greatest, and to you, the most profitable gathering of people that comes to your city. Your exhibits in mechanics, manufacture, merchandise, music, women's work and fine arts are greatly admired by all. But we do feel that many of your people do not fully appreciate this exposition, which, it would seem, would be of the greatest interest to you. Your population is about 180,000. One-half that number of admissions from your city, together with the thousands from other parts of the state, would make it one of the largest gatherings of paid admission people on earth. You have the opportunity open to you to place Ohio and her products in the forefront and make your city the leader in material progress.

NURSERY AND ORCHARD INSPECTION.

In this division we were unfortunate last year in losing the services of Mr. Burgess, chief inspector since the organization of the division. Mr. Burgess accomplished much good for the orchards and nurseries of the state. His ability was recognized by those interested in other states, and he was offered compensation for his services by the state of Massachusetts much above what our appropriations would permit, consequently his resignation. We were fortunate in securing the services of Mr. Mally as chief inspector last March, and he took up the work where Mr. Burgess left it and was doing excellent work, but unfortunately for us, he was offered a position in South Africa with compensation above our ability to meet, hence his resignation was sent in, and took effect December first. Since the resignation of Mr. Mally, the division has been conducted by Secretary Calvert and Mr. Evans, chief deputy inspector under Mr. Mally. Owing to the illness of Mr. Evans I am not able at this time to give a report of the work done in the past year, but this will be given in the official report soon to appear.

DIVISION OF HORTICULTURE.

One year ago there was added to this department a Division of Horticulture, with Mr. W. W. Farnsworth as chief, who devotes only about four months of his time entirely to the office. Mr. Farnsworth has done much effective work, and I think the orchardists and all those familiar with his work recognize and appreciate it. Much is needed in this division. Unless our fruit growers can be made to see the necessity of combating the many insect enemies now destroying our orchards and fruits, the farmers' orchards and fruit gardens will soon become things of the past.

It seems to me that nurseries and orchards and horticulture are so closely allied to each other that all should be under one head, receiving larger appropriations from the state so as to have funds to secure the most efficient chief, with specialists capable of going direct to the farms with full equipments for spraying and otherwise destroying the insect pests. A few practical demonstrations in this way will do more to teach the farmers than all the circulars the mails can carry. Neighborhood meetings should be conducted by these specialists, and two or three of these held at the proper time in each county would get every farmer thinking. To accomplish any good measure all that is necessary is to get people to direct their minds in the proper channel. I believe our nurserymen and dealers in fruit trees are, under the present system, thoroughly guarded, so that buyers of fruit trees can be assured that our inspectors' certificates are reliable, but the additional need now is to get the small orchardist sensible to his condition and the doom that awaits him under his present inactivity.

Another burning question for our people is the preservation and increase of our forests. This is not a division of the State Board of Agriculture, but so closely related to fruit growing and horticulture, and there are so many enemies common to both, that there should be at least a close co-operation, perhaps under one head.

COMMERCIAL FERTILIZERS.

Our fertilizer laws were enacted for the purpose of protecting the farmers of the state. The intent, no doubt, was that the published analyses of the goods should show plainly to the purchaser the elements and amount of plant food in a given quanity. This it fails to do, but on the contrary, the analyses and publication of the same, as has been the practice since the law became effective, is a delusion and a snare—a means by which the dishonest manufacturer or dealer can defraud the purchaser and force the honest manufacturer on a par with him or go out of business.

SOME WEAK POINTS IN THE LAW.

The present law permits manufacturers to brand rock goods "bone," so that the purchaser is often sold the ground rock as a dissolved bone, and pays the same price for a cheaper grade of goods as for a better grade. For example, one dealer had two brands of goods, both from the same mixture, one called "Blank," the other "Dissolved Bone," the state report showing the same analysis on both. The "dissolved bone" he sold at $5 per ton more than the other goods. Another dealer, when asked for "bone," sold this same ground rock, with a little ammonia added, for $35 per ton, it having cost the dealer $21 per ton.

The law does not consider the source of any ingredients; the ammonia may come from leather, peat, wool, hair, hornshavings, etc., yet not have a particle of available plant food in it. Section 4446*f* states that a deficiency of one per cent. of nitrogen, potash and phosphoric acid claimed to be contained shall not be evidence of fraudulent intent. Thus a deficiency of one per cent. in all those ingredients would lower the value $5 per ton.

SOME CHANGES IN THE LAW.

No manufacturer should be allowed to use the word "bone" in any brand of fertilizer that does not obtain its phosphoric acid wholly from animal bone.

The source from which all elements come should be given in the analysis.

Each package should be marked with the name and address of the manufacturer, number of pounds in package, per cent. of ammonia, available phosphoric acid and potash, analysis guaranteed by the manufacturer. Such marks as "Equivalent to," "Equal to," etc., should be omitted.

In Ohio last year about 115,360 tons of fertilizer were sold, costing about $2,228,190. It is well known that by false branding dealers can readily add $5 to $10 per ton above real value, the latter figure making over one million dollars, or half that sum for the former, but that is not the worst of it; the farmer does not apply to his land what he intended, and the loss in profit from this source many times is much greater than the cost of the goods.

Our secretary and Board of Agriculture are determined to exhaust every legal means in the state to bring fraud to justice, and hereafter, let me assure you, that the fertilizer laws will be enforced so as to prevent fraud to the very limit of the power that in them now lies. But under our present enactment, we cannot do as much as justice demands. In view of the opportunities and inducements for fraud in our present laws, I hope this body will take action by resolution demanding a revision of our present fertilizer laws.

STOCK FOOD LAWS.

Our stock food laws were copied largely in language from our fertilizer laws and are not proving of any advantage to the stock feeders, but rather a disadvantage. They, too, need revision. I would especially urge that every stock food found containing weed seed that will germinate, be prohibited from sale in the state, and the manufacturers of same be heavily fined.

LIVE STOCK COMMISSION.

The Ohio State Board of Agriculture, by an act of the legislature, is also the Board of Live Stock Commissioners, whose duties are the promotion and protection of the live stock interests of the state, the prevention and spread of infectious and contagious diseases among domestic animals. Dr. Paul Fischer, state veterinarian, and Dr. M. B. Lamb, assistant veterinarian, are continuously employed, both capable and faithful, doing excellent service for the amount of funds appropriated for this division—only $5,000—entirely too small to produce effective results.

The most serious diseases among our live stock are hog cholera, tuberculosis in cattle, glanders in horses, and rabies. The Mallien test for diagnosing glanders in horses, and Tuberculine for tuberculosis in cattle are receiving much attention. Both are accepted by scientists as reliable and mostly so by live stock men, but all agree that neither in any way indicate the advance or stage of the disease, whether local or generalized; whether in a state to make the reacting animal a menace to other animals or human beings either in contact or consumption of products. Stockmen believe that many animals after reacting live and do good service many years and die of old age or other diseases, and at no period during their lives did they ever communicate the disease to other animals or man.

In some cities the boards of health are demanding that all milk cows furnishing milk for the city supply must be tuberculin tested. This brings the Board of Live Stock Commissioners to a very difficult problem, one that, under our present authority, cannot be solved. City authorities may prohibit the sale of milk within their limits, but they cannot compel dairymen to test their cows with tuberculin, neither can the Board of Live Stock Commissioners. A city placing this restriction on the sale of milk forces dairymen to do one of three things, to-wit: first, to comply with requirements; second, get a market for their products in other cities; third, sell their cows to go into other herds.

In regard to the first, before dairymen will submit to compulsory testing of their herds, they will sell all suspicious animals to go into other herds, and thus spread the disease. They can render every animal immune to the test by injecting into each tuberculin, which is now well known, so that when the public tester comes he gets no reaction and may give the worst diseased herds a clean health certificate.

Either of the last two requirements mentioned above would cause a milk famine in the city, advance the price of milk beyond the purchasing power of the poor.

Had the Board of Live Stock Commissioners the power (which it has not) to force the tuberculin test, it would be unjust to test in some sections of the state and not in others. Until it can be proven that the danger is serious to either man or animals of contracting tuberculosis from reacting animals, either by contact or consumption of their products, the live stock interests will not submit to such compulsory acts.

Dr. Leonard Pearson, state veterinarian of Pennsylvania, says: 'The alternative method of eradicating tuberculosis is the slaughter of all tuberculous cattle, but experience shows that the slaughter method is not feasible. The depletion of the cattle and the loss would therefore drive hundreds of thousands into bankruptcy or drain many millions from the public treasury."

The Commissioner of Domestic Animals for Connecticut says: "The consensus of opinion among scientists is that only a small percentage of tuberculous animals have the disease in a contagious form."

The said commissioner further says: "The experience and observations of the commissioner during the past seven years convinces him that bovine tuberculosis is a stable disease, that it is very rarely, if ever, communicated from one animal to another while cows are in the pasture, unless it be to a sucking calf, and that it is safe to assert that this terrible scourge will never be permanently removed from the dairy herds of the state until more sanitary conditions are introduced into a great majority of the stables where the dairy cow is housed.

"The results of careful experiments made by scientific men, who for years have been searching for the truth, have clearly demonstrated that the germs of tuberculosis will lose their vitality in a very short time, if exposed to the direct rays of the sun, and they cannot retain their power to do harm for any great length of time in diffused or reflected light."

Dr. John Weinzirl, a German scientist, tested the direct action of sunlight upon the bacilli of tuberculosis by smearing a solution containing them on glazed paper, exposing it to the sunlight and afterwards inoculating an albuminous culture medium with the dried residue, and the results show the bacilli were killed in ten minutes.

Dr. Weinzirl says: "I believe that sunlight possesses a much stronger bactericidal action than has previously been realized, and that consequently as a hygienic factor it is far more powerful than has before been known."

New York and Massachusetts, after trying the slaughter method some years, repealed the law and now require noticeable indications of disease from a physical examination before the tuberculin test is permitted. A late letter from a member of the Cattle Commission of Massachusetts says:

"To carry out the policy of compulsory tuberculin testing and slaughter of reacting animals cost the state from $250,000 to $300,000 a year. A great many cows were tested with tuberculin and condemned that on post mortem showed only small traces of tuberculosis in the glands. Many of these cows were in good condition and had not reached a point where they would be a source of danger to other cattle and to the public health. You can see that such an extravagant policy could not continue."

The basis of the remedy I will suggest is sunlight, pure air and better sanitation. This can come only through education. I believe the State Board of Live Stock Commissioners should enter upon a vigorous campaign of education; appoint two practical live stock men as inspectors to work in co-operation with the state veterinarian, whose whole time shall be occupied in holding instructional meetings over the state, teaching farmers the laws of sanitation and care of live stock, and all, both producers and consumers, in the care of their products, with power to tuberculin test cattle without cost at the request of the owner; to slaughter all animals showing by physical examination that they are a menace to the public health or the live stock industry. I believe in the tuberculin test for suspicion of disease and partial or full quarantine, and where there are physical indications of disease, animals should be slaughtered.

At a meeting of the Jamestown Commission with the Ohio State Board of Agriculture held September 4, 1906, the latter was asked to make an exhibit of Ohio's agricultural and horticultural interests at the Jamestown Exposition, and allotted of the Ohio appropriation the sum of $7,500. The board accepted the proposition and appointed A. P. Sandles, Samuel Taylor and William Miller a committee to collect, prepare, install and maintain such exhibit.

Immediately upon the organization of the committee, Mr. R. J. Tussing was employed as superintendent. The committee is indebted to many of the citizens of Ohio for products furnished for the exhibit, and also to Mr. Tussing for the faithful performance of the work assigned him.

Ohio and the State Board of Agriculture received 11 gold medals, six silver medals and four bronze medals for horticultural exhibits; eight gold medals, three silver and seven bronze medals for agricultural and horticultural exhibits, which is a source of much gratification to all interested.

Ladies and gentlemen, in conclusion I wish to compliment the State Board of Agriculture on the harmony and goodfellowship existing between its members, and the grand results accomplished during the past year. Fellow members, I extend to you my heartfelt thanks for your co-operation and wise guidance. To the assistants in every department, you were faithful and true, for which I tender you the sincere thanks of the board.

I congratulate the county and district fair managers of our state on their splendid achievements during the past year, and all our people on the growth in agriculture, manufacture, science and art.

I point with pride to the Ohio home, the character of our people, Ohio manhood and womanhood—the best citizenship the world has ever known.

President Bailey: Gentlemen, we will now proceed to the nomination of officers of the State Board of Agriculture. There are two members to elect, each to serve for five years. The secretary will call the roll, and you can rise in your places and make your nominations.

Mr. Brandt, Franklin County: Gentlemen, I desire to present as a candidate for one of these very important positions the name of R. J. Tussing, Franklin County. Franklin County feels, in presenting his name for this important position, that she is honoring not only herself, but that she is honoring as well you of the State Board of Agriculture and the farmers of the great state of Ohio. I say this with a full knowledge of the excellent personnel of that splendid Board and of the high standing which has been so wisely fixed for those who would gain admission to its membership. I shall not take your time, as it is growing late, in telling you all the reasons why we believe he should be chosen. He is known to many of you in person, as he is known to us here in his own home. He has spent all the years of his life among us here, and we have seen him crowding into these years the good deeds and the worthy achievements of a busy, successful life. He has demonstrated to us that he knows how to attend to his own business; he has further demonstrated that he is a fit servant to be intrusted with the business of others.

We feel, gentlemen, that he is deserving of all promotion, and we entertain the highest confidence that after careful consideration this may be given to him at your hands.

Mr. Chamberlain, Logan County: Mr. President and gentlemen, I rise on behalf of Montgomery County to present the name of Charles W. Haines. I take the license of calling your attention to the fact, as was suggested last night by one of the speakers here, that we are extremely proud of the agricultural interests of this country. We have been daily and yearly adding to the area of the agricultural lands of this country; our wealth is sweeping along at the rate of somewhere between seven and eight million dollars' production every day.

We appreciate the fact that Mr. Haines lives over in the grand Miami Valley, one of the richest agricultural regions of Ohio. We know that Mr. Haines is one of the kind of gentlemen that not only can tell us here how to do something, but is able to do it. He has been tried in many ways in his own county and in his own neighborhood. He has been a patron of the county fair and of the state fair and of other fairs in Ohio. He has been a member of their own fair board down there, which has erected during the past year one of the finest grand stands in the country. He has been county examiner of the county for more than two terms. He has served in all these various capacities.

As has been suggested by the Governor just now, one of the greatest questions that will engage the attention of the farmers of this land is the tax question; and when we stop to think that only six per cent. of the personal property of Ohio is upon the tax duplicate, we will understand that somebody else is not returning the other ninety-four per cent.

We believe that Mr. Haines has that executive ability that he should be given a place upon the State Board of Agriculture of Ohio, and that he will give you the benefit of his ripened experience which will contribute to the value of the deliberations of the Board as well as benefit the fairs of Ohio.

I do not present Mr. Haines to you as having come from Tennessee, or from Kentucky, or from the Mammoth Cave; but I can only paraphrase that expression that was uttered some years ago, that it is not Grant from Virginia, or Grant from California, or Grant from Illinois, and say to you that it is not Haines from Logan, it is not Haines from Montgomery, it is Haines from Ohio.

Mr. Dunham, Warren County: Mr. President and gentlemen, with your permission it is my pleasure to present to you a name from Warren County of one entitled to membership upon the State Board. In so doing I am presenting a member whose experience has been extensive for over forty years with the various county fairs in the various counties in the State of Ohio, and whose labors along that line entitle him to be called up to the grand circuit because of his zeal and efficiency along this line. His ability and efficiency have been recognized for thirty years.

I might go on and tell you much more of the wonderful products of the county of Warren and of the fertility and richness of the Miami Valley; but suffice it to say that I offer you the name of George W. Carey for your consideration as a member of this Board, and the people of southwestern Ohio will appreciate his being elected to that position.

Mr. E. O. Bradfute, Greene County: Mr. President and gentlemen, I not only have the pleasure, but I esteem it a great honor to be on this occasion permitted to represent Greene County in presenting to you a man for this office. The county of Greene, as you well know, stands foremost in agricultural interests in the State of Ohio. There is no county in the State that takes a higher rank in her live stock than does the county of Greene; and I hope that it will be considered by every gentleman who may have a vote in this company of able men that the State Board of Agriculture no longer occupies the position simply of a fair board, but it is a board of immense importance to the State with respect to the questions with which it has to deal; and I therefore want to place in nomination a broad man, a man who not only knows something about affairs, but who knows something of agricultural conditions generally, and of the live stock conditions in the State, that must necessarily come before a board of such importance as the State Board of Agriculture.

I am glad to say that our county is a unit in supporting the man whose name I wish to present as the representative of Greene County for service on this Board, a position in which he will do credit to himself, credit to his county, and honor to his State—G. E. Jobe, of Cedarville, Ohio.

Mr. Pollock, Stark County: Mr. President and members of the Ohio State Board of Agriculture, it is with pleasure that I come before you today to present the name of one of Stark County's citizens. Stark county has produced a great many good men known the world over. There is no county in the State of Ohio that takes more interest in agricultural work than the county of Stark. I come to the state fair here year in and year out and look with pride at your beautiful grounds, but next to the state fair I believe that Stark County has a fair ground equal to any other in the State of Ohio. Our agricultural board there is always alert.

I desire to present the name of a man who stands foremost in in our county both in a business way and as a farmer. He is one of the leading stock raisers in our county. I refer to Mr. William J. Pontius, who is well known throughout Stark County and that part of the country. I assure you that if you see fit to elect William J. Pontius as a member of this Board that you will find him a man of a great deal of business ability as well as integrity and honesty, qualities which have distinguished his entire career. (Applause.)

Mr. L. M. Kauffman, Summit County: I had the privilege of announcing Perry Ewart, of Summit County, as a candidate for the unexpired term of one year made vacant by the death of Hon. R. O. Hinsdale. You agreed with me that Mr. Ewart was entitled to recognition by this association at that time, and again I have the honor of placing Mr. Ewart's name before you as a candidate to succeed himself as a member of the Ohio State Board of Agriculture for the ensuing term of five years. Comment upon the character or ability of Mr. Ewart at this time I think is scarcely necessary. I would assert in the words of Webster when he represented his great State in his memorable reply to Hayne that, "The past at least is secure."

I can say this, however, for Mr. Ewart that I have known him personally for years as capable and efficient; I also know him to be strictly honorable. I believe that he has filled the office during the last year with credit to himself and to the entire Board. I believe that he is entitled to your consideration at this time, and in presenting his name again I desire to thank you for the favor conferred in electing him a year ago.

Mr. Scott, Jefferson County: Mr. President and gentlemen, Jefferson County is a bluegrass and mineral county. She has vast wealth in both. She comes across the State to Columbus at this meeting for the purpose of seconding the nomination of the candidate from Greene County, possibly the greatest live stock county in the State. We know Mr. George E. Jobe to be one of the foremost citizens of that county, having been acquainted with him for a long term of years, and we heartily endorse and second his nomination for membership on the State Board of Agriculture.

Judge R. M. Eaton, Belmont County: Mr. President and gentlemen of this convention, one year ago a number of us were, by the courtesy of our societies, permitted to come here as their delegates from Belmont County and the eastern border of the State. I was of that number when Perry G. Ewart, of Summit County, was placed in nomination for one year to fill the unexpired term of Hon. R. O. Hinsdale who had deceased.

By special permission of my good county I am permitted to again meet with this grand body of the farmers of Ohio. We acted wisely and well when we last year elected Mr. Ewart to fill the unexpired term. He fitted right into that place on the Board.

I am again happy, my friends, to second the nomination of Perry G. Ewart for the full term to which I think he is entitled, and I hope that there are a sufficient number of you here who think as I do. I shall not take your time to elaborate upon Mr. Ewart's good qualities, but having known him for forty years, having visited in his county and witnessed the respect in which he is held there, I say without fear of successful contradiction that he is so straight that he can not lie in bed crooked. (Laughter.)

Mr. George N. Wilbur, Scott County: Mr. President and members of the Ohio State Board of Agriculture, we have all listened to the outbursts of eloquence of our silver tonged orators in praising the good qualities of their able candidates. I desire to say to you that while we may be last we are by no means least when we present the name of the last candidate for this honor. The gentleman to whom I refer is a native of Union County. He has always been interested in agriculture. He commenced milking the day he was born, and he has been interested in agriculture ever since. The gentleman to whom I refer farms some fourteen hundred or fifteen hundred acres of land, subdivided into smaller farms, each and every one of which is a model in its way. He has been interested in all kinds of agriculture and not only handles in carloads, but train loads. He has been interested in banking and has been a member of the Union County Agricultural Society for many years and has held every office in that society. For the last three years he has been its president. In addition to that I want to say that he is a thorough gentleman in all places and at all times. I have the especial pleasure and consider it a great honor to present to you the name of Homer Southard, of Union County.

A delegate seconded the nomination of Mr. George W. Carey.

Mr. Vining, Mercer County: I desire to second the nomination of Mr. Haines, of Montgomery County.

President Bailey: Gentlemen, are there any further nominations? We do not want to cut off any nominations, but as there appear to be no further nominations we will now stand recessed until 2:00 p. m., at which time I hope that you will all be promptly on hand.

Recessed accordingly.

THURSDAY AFTERNOON SESSION.

The convention met pursuant to recess, President Bailey in the chair.

After music by the Cecelian Ladies' Quartette, the chair introduced Professor A. B. Graham, of the extension work of the Ohio State University, who spoke as follows:

ADDRESS—"THE FARMERS' SCHOOL."

BY PROF. A. B. GRAHAM, O. S. U., COLUMBUS.

Mr. Chairman, Ladies and Gentlemen:—I consider it a pleasure to talk to you a little while this afternoon about "The Farmers' School." I cannot say that there is a striking difference between the farmers' school and any other person's school in the essentials, but during the time that we are discussing this subject let us bear in mind that our remarks particularly allude to the country school—to the rural school. That is the one that is near to us, because we are rural people.

For long years the city schools have practically been taking care of themselves, because the cities are centers of population and therefore subject to organization to which the rural schools have not been subject. The very fact that we are disintegrated, that we are somewhat separated from each other in the rural districts makes organization in a degree less possible, although no less effective when perfected; but there are some conditions that are of vital interest today surrounding our rural schools that have been brought about because of peculiarities of rural life. These changes that have come about have been slight ones; generations have come and gone, and we have hardly become aware of these changes in social, economic and industrial conditions with which we are today face to face and which must be considered before we do the best for our country boys and girls.

We had discussed in the most excellent and thorough manner yesterday afternoon the social life of young people in our rural homes. I hope that before I have closed I may show you something of the social life of those boys and girls in our rural schools; how the school itself is affected by that life, and how the school itself affects the child through the social life.

But before I take up that subject I want to run back in a hasty way over some of our school history in Ohio. In 1806 the Ohio law permitted the township to be divided into school districts—not subdistricts, but school districts. No money had been appropriated by law for these schools. The year 1821 found a law on our statute books empowering the people of those districts to erect school buildings, and at that time there was no legislation as to the amount of money that might be expended for such purposes. In November, 1825, twenty-two years after the state had been admitted, there was a law placed on our statutes that empowered the people to raise money by public taxation, and that was only to the extent of half a mill. Until that time no teacher in Ohio had been certificated under the statute. Until that time any teacher who could teach a school might be employed. In 1825 a law was passed requiring the teachers to be examined in reading, writing and arithmetic, the latter to extend no further than the single rule of three, simple proportion as we have learned to know it. A few years later these examiners of public schools were authorized to appoint an examiner for each township whose duty it was only to examine lady teachers, and they were required to be examined in reading and writing only, not spelling or arithmetic. The men had to be examined in arithmetic, which certainly must have been a trying ordeal. That law of 1825 remained practically unchanged, so far as the certificating of teachers was concerned, until 1853; and now I am sure I am coming within the recollection of many who sit before me. After 1825 these examiners of schools had a right to be examiners of schools as well as of the teachers, for they had a right to visit the rural schools of the townships in the county they were serving.

In 1838 this right was denied them, since the law had been so changed that the clerk of the township became the superintendent of the township schools.

Now we are talking all over the state of Ohio about mandatory supervision of rural schools, county supervision, and here in Ohio back as far as 1838 we had township supervision in every township in the state if the clerk cared to exercise his duties as specified by law. I have had the pleasure of reading some of the reports of some of those old township clerks, as found in the records of Miami County, some of which have been carefully preserved as they appear in the handwriting of the old township clerks of some of these districts.

Passing down from 1838 to 1853, we find their rights curtailed somewhat, until about that time or before that time, the law did not make it mandatory on them to be superintendents of schools, but they might be so if they chose; and that so long as they visited the schools they were to receive $1 a year for each school they were superintendent of—$1 a year! And that very law is on the statute books of some of the New England states today. It was no doubt copied after the old New England State law, and is in force in Maine today.

In 1853, or practically co-incident with the change of our constitution—not exactly the same year, of course,—there came a change in our school laws. The local mill levy for school purposes was raised and teachers were then required to be examined in reading, writing, arithmetic and spelling, English grammar and geography. Never before had they been required to be examined in orthography, as it is now named in the law. Does that bring clearly to your recollection the old Mitchell geography or any book of that kind? Can you see yourself lying down flat on the floor of your home poring over an old Mitchell's atlas spread out before you? Can you see anything like that? I can. While I could not understand a word of the thing, it appealed to me because of the pictures in the book, and aroused an interest in the study of geography at an early age. It was published before my time, but those old books were to be found in my father's home. The law of 1853 made it possible for every township in the state of Ohio to have a township high school; yet I have not been able to find any record of such township high schools either in the office of the school commissioner or in any of our libraries. If any man in this audience knows of a township high school that was organized back in the 50's, I would like him to let me know it after the adjournment of this meeting or by correspondence. I like to get hold of those things. This law made a requirement of the teacher as to his intelligence that had never before been made. The public sentiment back of this requirement was represented in the enactment of the old Akron law, which applied only to the city of Akron and which was passed in 1847 to perfect Akron's school system. The law of 1853 made it general with all school districts and townships that they could organize and support high schools or schools more advanced than the primary schools, as the law states it; the primary school being one with a course extending over a period of eight years, covering the elementary branches, and more commonly known as district schools. Eight years was the average period, but sometimes it took longer to get through them than it does today.

The law of 1853 as to the certificating of teachers remained the same until 1882 or 1883. In 1880 United States history was added, and since then physiology and the effects of narcotics have been added. The law of 1853 was practically re-enacted in 1873, when boards of education, by a majority vote, could erect and organize high schools, which the law of 1853 had said must be done by a vote of the people. The law of 1873 left it to a vote of the board, which, of course, was supposed to be acting within the desires of the people.

Later on laws came onto our statutes which permitted the boys and girls to take examinations in the elementary branches and obtain a little certificate called the "Boxwell certificate," and today the "Patterson certificate," or "Patterson-Boxwell certificate." But no matter what the name is, they can take that little certificate, go to some other high school, and have the advantages of secondary education. The law was so changed afterwards that it made it mandatory upon boards of education to pay the tuition in any high school in the county adjoining the county, providing the pupil had taken his elementary examination in that county.

Now we have come down to this bit of school history that has shown us the advance in public sentiment in its desire to have our boys and girls have the advantages of secondary education, and that high schools could be organized in our own school district, the school district today meaning the township, not subdistrict. Now, my friends, when we come to look back over the educational history of Ohio we find that from 1835 to 1875 there occurred the rise and fall of the old private academy. The academy served a worthy purpose

Some of the strongest men and women of today have been those who attended those old schools. Very few of them are found within our borders today, except they be connected with some regularly organized college. The gentleman who is to follow me was in attendance during his earlier life upon one of those old academies up in Trumbull County, and that very academy is, figuratively speaking, the parent of the public township high school in the same township. That old academy is no more. I have found as I have passed around over the state those old intellectual punctuation marks all over the country. They have done noble work, but their usefulness was circumscribed. They did not reach out to all the boys and girls. They did not serve the rich and poor alike; yet a few of the poorest boys and poorest girls of the community have attended those academies.

Today there are 230 township high schools in the state of Ohio, and the total number in attendance upon them far outstrips the total number ever in attendance upon those private academies, while their advantages are for the whole people. There was a danger in those old private academies that does not exist in the township high schools, and that is that the change of teachers made a change of attendance which was felt much more perhaps than is the case in our public high schools today. The opportunity for the organization to prove remunerative to the one who organized it determined very much whether it would live or die; and the chances were that the academies in the villages would run along for five or ten years and would then become disorganized and go to pieces. Along would come some graduate of some eastern college or some Ohio college, and organize an academy in the same place where the former one had become disorganized. I know that was the case with respect to some of the old academies in the western part of the state that I learned more about in my boyhood. They were in existence from five to ten years, then they would go down, and then be built up again. Every one of those academies in that part of the state may be thought of today as the parent of a special district village or township high school. We wonder sometimes whether or not it is possible to organize township high schools, the farmers' high school, providing secondary education for country boys and girls; but my friends, if investigation is worth anything, it has proven to me that it is not the township that has the enormous wealth that can afford or does afford to organize those schools, but it is the township that has the wealth of public educational sentiment that has organized them rather than the township that has had its millions. The townships of Ohio that are worth from $100,000 to $200,000 have two high schools in them, and the 130 townships that are worth from $200,000 to $300,000 have two more township high schools in them; but when we come up to those that are worth from $400,000 to $700,000 they have 111 out of 230 in the state, while those that are worth $1,000,000 and more, often on up to $2,000,000, only support something like 35 township high schools.

So you can see it is not so much a matter of how much money a township has as it is how much educational sentiment it has, how much it desires to do for the country boys and girls.

Now perhaps you have expected me to discuss the farmers' school from an agricultural standpoint. I am not here to discuss that point to the exclusion of other things that are necessary for the education of the boys and girls, for there are other subjects in our schools that make quite as much for manhood and womanhood as the study of agriculture itself, and we must have them there. They were found in the old academies, and are still in our schools and will remain there. Seventy-five years ago Harvard and Yale offered less than three months on chemistry and less than nine months of work on physics, or natural philosophy, as it is commonly called; today the average township high school offers more of scientific work than Harvard, Yale, William and Mary or old Williams offered fifty or sixty years ago. Let us bring these things close to the boys and girls in our homes and we will not need to send them far from home to educate them in these branches.

Literary studies are absolutely necessary for every boy and girl. I care not if the boy or girl forgets half the English literature he ever studied in the school room; I care not if he forgets half the general history that he ever had to study during those two or three years; it makes little difference if he forgets every word of Latin or German that he ever learned there, he is the better as to his own feelings because of having pursued these studies; he becomes a better citizen because of the power that he acquired through the study of those subjects to understand human nature as apart from his knowledge of the subjects themselves. It pays to educate for power as well as for intelligence. Mental discipline is worth as much by itself as the knowledge of the subject studied. I am willing, and I think you will be, to trust the young men and young women who have gone through two. three or four years of that kind of work as to the kind of men and women they will become in their communities. So our schools today for our farm boys and girls should do as much of literature, of history, of mathematics, of science as the course will permit and as the teachers can prove themselves qualified to teach.

Literature makes for culture and refinement as hardly any other branch in our course of study will. The boy or girl who becomes thoroughly imbued with the spiritual side of literature I think we can safely rely upon in their future life under ordinary circumstances.

But now, my friends, let us consider the sciences. There is opportunity to teach natural philosophy, to teach botany, to teach physical geography and chemistry, that the student shall not only acquire a knowledge of the laws of nature, but, if properly taught, will be enabled to use the laws of nature in better winning his way in life; and if he knows how to use this knowledge, science becomes the staff upon which the agriculturist must lean. But it will not make a business man out of him. It may help him in his business, but it will not train him to become a business man. Perhaps no high school can put out a trained agriculturist; no high school ought to put out trained agriculturists, but it ought to give him some knowledge of those things with which he has to work, those things which are thrown about him in his early life long before he ever came to the high school. He ought to be able to know how to use those things in better carrying on his work. It seems to me that in this way in particular we are warranted in asking for teachers and arranging for the teaching of agricultural science in our township high schools, in order that the boys and girls may get a proper insight into agricultural practice; that they may have that knowledge that will help them in their future work.

Let me give you a few examples. In natural philosophy, under the subject of color, why is not the boy and girl entitled to some knowledge of color as it pertains to the soil—as to what soil holds heat best—light colored or dark colored? He wants to get humus into the soil in some form or other, as much to change its color in one way as to provide it food in another. Suppose the subject of ventilation were under consideration in a class, why should not the child learn to know something of the ventilation and areation of the soil? Why should he not learn to know, under the subject of heat, the effects of moisture and the conductive power of the soil? Why should he not learn what the effect of the evaporation of water from the soil would have upon it? Now those things are not written in our modern text books on physics, for in the past our physics has looked more to the mechanical side than to the agricultural side, and we need our boys and girls to have this knowledge of the sciences that they can make applicable to every-day practice in life.

I do not want to take up the subject of botany, but I will venture to say to you that these little references will show that our boys and girls can study for a year or six months the subject of botany and yet have no idea how a bud is set on a tree, or how a graft is placed. They may learn at some future day how "grafts" are secured, but they do not learn exactly how to place them so early. We do not want the boy to learn that side of it; we would rather have him learn the natural science side of grafting rather than the political side of it, which latter he will learn quickly enough, goodness knows; but let the school student have the science side of it. Our boys and girls are taught osmosis, perhaps; they are taught that the leaves manufacture starch; but do they go into the corn field as our friend Williams or someone else of us might do and select the corn that has great leaf exposure? Are these points brought out to the student? Is he given any information as to what leaf exposure means with reference to the evaporation of water? Is he given any idea about how deep a root would strike where there is or is not a volume of moisture, or where there is or is not free water? Not one thing of that kind, as a rule, had ever been taught in our botany classes ten or fifteen years ago. Our teachers are learning to give them today; they are learning to apply botany to the horticultural and agricultural side, and to so teach physics that the parallelogram of forces has as much applicability to the setting of a plow to take more or less land, to go deeper or shallower, as it has to the sailing of a ship that has been so much diagrammed in all the old books on physics. It has quite as much place on the farm as in the factory or some other place. These sciences may be so taught that they will touch the life of the farmers' boys and girls, and are thereby much better taught. The newer teaching creates in the student a desire not only to know the subject, but how best to apply it to advantage. It not only provides pleasure, but profit as well. At the same time, my friends, such teaching of the natural sciences in our schools helps to dignify the labor of the farmer. All that knowledge which the child sees has a practical use in life helps to dignify the labor that is necessary in carrying it into practice. I believe that if the agricultural branches themselves are not taught in the high schools, then all the other sciences and studies ought to be so taught that they shall have application to the life of the farm boys and girls.

We are not going to keep every boy and girl on the farm. We never have in the past, and it is not desired to do so in the future. Some of these children are going to stay on the farm. But I care not what these subjects may be, we may direct them toward the farm, and then even those whose aspirations are not in that direction will have more sympathy for their mates who intend to become farmers.

We cannot educate a boy or girl to cross purposes; if born to be artists, let them be artists; if born to be mechanics, let them be so; but I am not here to take a stand for special adaptation or anything of that sort, for I take it that any boy of ordinarily well disciplined mind can have his energies directed along almost any line and be as successful in one work in life as in another.

Now, my friends, there is another side of this school life that I want to speak of, and that is the social side of it. There are 6,300 boys and girls in the state of Ohio for whom boards of education are paying tuition to city and village schools. Did you ever stop to think, my friends, what that means? In a large per cent. of those cases their social life will become linked with those who are not exactly in sympathy with rural life, whose environment is different from the life of the boy and girl on the farm. They will form a social bond through daily association in the school with those young people whose life is naturally directed toward the villages and the cities; and I want to say to you that every township that adopts the tuition paying plan to take care of their boys and girls, providing they are not immediately adjacent to the city as some of our townships are, has a tendency to break up the social life of the township and send it out away from it, rather than centering it within the borders of the township, and every board of education will serve its own community best by bringing more of the communities' money into a school that they can call their own and of which their people will become proud. (Applause.)

If we want to preserve rural life we must do exactly what the city is doing which helps to preserve and make its life richer and better; we must have our own secondary schools when possible. The township cannot keep its social life as a unit if it does not provide its own school. You, my friends, who went to the academy or to the little district school where you met daily with your mates, have a corner in your hearts that is warm toward those schools today; and the social life of the school is recalled more vividly than some of the lessons that you received from your books. The social life of the school was the strongest tie that bound you to it. These boys and girls may come from some distance, but in their games on the school ground their social life is of such a nature and of such a quality that it binds them to each other. In their games they learn some of the virtues of life, such as honesty in the game, fairness in it—unselfishness. Let us not then minimize the value of games on the public school playground, whether it be in the district school or in the township high school. There the boy and girl learn their first lesson in government outside of the home. Civil government may be taught within the four walls of that building, but it is on the school ground that they learn the practical lessons of life; there they are actively practiced. They may learn the rights and duties of citizens, as expressed within the lids of the book, but when they go out upon the play ground, there they act the lesson out, whether the book taught it or not. The school playground is the greatest school there is in this country, and there is more of goodness manifested actively there than there is inside of the walls. See your teacher on the playground with you; see your mates on the ground with you, and see if there is not that fairness and honesty and unselfishness, and other virtues that I might speak of, that are actively worked out there and which become part and parcel of that soul. My friends, unfortunate that school is, whether district or township high school, that has not enough boys and girls in it to play the ordinary games. The teacher can teach the lesson, but it is on the schoolground where the children play their games and exchange ideas with each other that they learn those lessons of life which are most lasting in their influence. Take a little district school with half a dozen children in it; such children cannot learn the lessons of life on the payground as they should, because there are not enough children of the same age or of the same size to exchange opinions with each other. They do not rub against each other as they do in the schools that some of you attended where there were from forty to a hundred enrolled. Out over the playground they went for their games of ball, prisoner's base and so forth for those that were old enough, and then the smaller girls would play "keep house," "come to see," dressing little dolls and bringing all the broken queensware of the neighborhood for miles around, while the boys rode their stick horses, played jail and all those games that boys of that day played. That was part of their life, just as much a part of it as the study of reading, writing and arithmetic, and just as necessary for the proper development of those children. It is as Mrs. Meredith said yesterday, we must provide amusement for these young people, which is what they crave from the time they occupy the cradle till they have reached majority and have the right of citizenship under the law. We must provide something that gives opportunity for these boys and girls to actively manifest what is in their heart.

I want to say further to you on the subject of the farmers' school that those boys and girls who learn to play the game fair will go into life more likely to be fair citizens; and for the boy or the girl who learns to play the games unfairly, look out. That boy who will not go when he is caught, and his mates must assemble and make him go every time, he is going to be a dangerous character in future life. In the playground he has the opportunity to manifest what is in his heart. If there was a young girl in the school that you attended who made trouble among her mates, she perhaps is the gossip of the neighborhood today; and that boy who made a business of stirring up trouble among his fellows on the playground is the fellow that is still before the courts today with some trouble to have squared up; he has trouble over the telephone line; he has trouble with the rural carrier; he has trouble with everybody, it is simply in him. He needed to have had it knocked out of him physically, if not mentally (applause); and the public school is the best place to knock those things out of a boy. He is going to get it, because if there are enough there and one fellow cannot do it, they will double up on him; they will get him after while. He will learn the lesson of fairness on the playground: I am not standing here to argue for fisticuffs on the playground, but I think I have seen two or three in my life as a teacher to which I have been blind. (Applause.) I did not want to take too much notice of them, because I thought the other fellow got a square deal. It was just the thing that he ought to have had.

Now, my friends, you take the little school that has three, four or five children in it; they cannot come in touch with each other in that little democratic life. What must we expect of them; what may we expect of them through that selfishness that they have acquired at home where they have been pampered and petted because they were nice, good boys and good girls? It is a good thing for the young man or woman, the young boy or girl that comes from a home where there is but one, to get into a public school and run right against the other fellow and find there is somebody else in the world. It is a splendid education for such a one. I am not an enthusiast on athletics, but I do want to stand here and say to you, my friends, that our public playgrounds ought to be made more of by pupil, teacher and parent.

We cannot flock by ourselves; we want others with us. What are we here for? Not because I am here. We are here to meet the other fellow and hear what somebody else said in the discussion of the little I may say. We are here because of this social habit that is characteristic of us. We stay here close to each other because we are created that way. Take away our intellect, take away our power to reason, judge, sympathize, and you have that same characteristic still. We want to get where the others are; we belong to that class of animals that cattle, hogs, horses and sheep and fowl belong to; we belong to that class of animals that are called gregarious or crowd-making animals. We come together. Fish swarm in schools; cattle go in herds; sheep go in flocks; so do we. And the public school playground is a social institution and cannot be, my friends, any other than a social institution. Our social characteristics are what holds the church together; that is what makes home life. It makes school life; it makes society and government possible.

I beg of you to study the social side of the school life of our boys and girls and how to enrich that life. At that period in life when they are springing into manhood and womanhood; when the youth wants to do and to be all that becomes a man; when the girl wants to become a woman; then we need resourceful teachers. At that time in their life when they are beginning to strike a balance, when they want to be a little more particular about the set of that necktie and the shine of their shoes; when the girl is particular about the set of her bangs; they are beginning to spring into that period of life when it is dangerous to take young people out of school. Some people say it is dangerous then to keep them in school, because they become so sweet that you never can tell where it is going to end. No, sir, that is a time when they must be under the charge of a resourceful teacher, where they need more care than at any other time. A sympathetic teacher will carry every boy and girl through that period safely. Oh, somebody says, they do get sweet. Yes, didn't you? You did, you couldn't help yourself; you were created to become so. Every normal boy and girl has passed through that period of life and ought to pass through it. It is a fine thing, provided he or she got safely over it; but sometimes when you are a little way on this side of safe, there are two of you instead of one, the public school and the college are good clearing houses. Oh, not for match-making, I do not mean that; but they come in touch with each other at that time of life when they like to be looked upon as men and women.

We are doing a dangerous thing for the young man or young woman when we take them from the elementary schools at fourteen or fifteen, even though they pass the Patterson-Boxwell law, and never let them enter school again if they desire to. Furnish them schools. (Applause.) Furnish them schools at the most important social period of their life, when they ought most of all to go to school, and when they can get the sweetest and best things out of school life. Let them study literature that touches their hearts at that time of life when they are receptive to its lessons; teach them to know more of their social community life, their civil government and history. Let us care for them in the elementary grades, but let us, by all means, give them a township high school, the little village high school, that is in thorough sympathy with our rural life and which will preserve our social life in the school.

Give them something of the intellectual side of life, but above all, my friends, get the best teacher for your boy or girl; do not get a cheap man. Cheap men in your schools are exactly like cheap horses, cheap hogs or cheap farming of any kind. You will receive returns, not perhaps in immediate dollars, but the resourceful teacher in your school makes for the richest manhood and womanhood that rises far above dollars and cents. (Applause.) We cannot put a thermometer into the brain of the boy and say that he has so many degrees of intelligence; we cannot measure him up with the yard stick; we may measure him physically, but, my friends, there is only one way to measure the product of your schools and that is by their productiveness in citizenship, to measure them in terms of what their graduates will be able to do in future life.

The richest man in the state may not be the most powerful man in the community, but the most powerful man in the community may be the poorest man financially. The greatest power that we should strive for is the power to interpret those things that are above us. If the farm boy and girl acquire this power of human sympathy they will be safe in school, in the home, in the church and in the community. (Applause.)

President Bailey: Ladies and gentlemen, I have the pleasure of introducing to you next a gentleman who is a product of one of those schools that Professor Graham has been telling us about. He is a man of national reputation who stands in the forefront as an experimenter and demonstrator in experimental corn selecting and corn breeding. Only last week he attended the State Agricultural Convention in Missouri and spoke before that body. Next week he goes to Nebraska. Two weeks ago he would have been in Kansas, but he had made arrangements to go on the corn train of the C. H. & D. Railroad in his own native state here. This gentleman is Professor C. G. Williams, of the Ohio Experiment Station; and I want to say to Mr. Williams that we do not want him to go outside of the State of Ohio any more, we are afraid that he will teach those fellows in those other states how to grow as much corn and as many hogs as we do here in this State; and we are determined to keep Ohio ahead if we possibly can—and we can!

Now, gentlemen, I have great pleasure in introducing to you Professor Williams. (Applause.)

IMPROVING THE CORN CROP BY SELECTION AND BREEDING.

BY PROF. C. G. WILLIAMS, EXPERIMENT STATION, WOOSTER, O.

One seeking to improve his corn crop will quite naturally set about it in one of two ways: first, by improving the conditions under which the crop is grown—the environment; second, by taking advantage of the inherent superiority of one variety, strain or individual plant over another.

Environment may be classified as natural or artificial. Nature has been very generous with her store of fertility, her midsummer heat and rainfall in the so called corn belt of the United States. The price of these corn belt lands would seem to indicate that some corn growers, at least, were disposed to improve their corn yields by taking advantage of these bounties of nature. So far as the conditions of fertility are concerned, we would not expect much variation from year to year, but in temperature and rainfall, nature is not uniformly kind, as witness the average yield of corn in the seven corn states in 1901 as compared with 1902, an increase in yield in 1902 of almost exactly 100 per cent. Until some corn expert desires to appropriate this great interstate increase as a result of his teaching, we will perhaps be at liberty to credit it to nature. Environment is mighty in so far as the corn crop is concerned. It is not confined to nature either. Man steps forward and by crop rotation, by fertilization and manuring, by the use of legumes, by the better care of seed corn and by better cultivation, increases his yields very materially.

Great is environment in the animal world! A few months of "home comforts" in the Mississippi valley will so transform the semi-wild razor-back hog of the forests of the Southland that his own mother cannot recognize him.

A change of environment is as potent in the other direction. Turn your lordly Challenger of the International over to the tender mercies of the average farmer and he will deteriorate into something that looks very like the real scrub.

Great is environment! Sometimes it seems as though it were everything. But no! In a stable with which I am familiar are a half dozen cows. They belong to the same breed. Their ancestry is much the same. Color almost identical. They have been fed the same kind of feed, differing by nothing in quality, and in amount by not so much as one-fourth of one cent's worth per day in the last 365 days. All working under the same controlled environment, and yet one has produced 400 pounds of butter the past year, while another has produced but 200 pounds.

To what is this difference attributable? Certainly to something inherent in the individual. This something existed in part before the appearance of this particular individual; it will be handed down in part to the descendants of the individual. This heritable something is what we know as heredity.

The individuality of each animal on this earth today stands out apart from all other animals, and the wonderful improvement which we observe when we compare the record-breaking cow of today with the cow of 100 years ago, the record-breaking American trotting horse of today with the trotter of the days of Dexter, has been brought about by selecting the exceptional individual from the mass and perpetuating his good qualities in part in his descendants.

The hereditary differences which have long been observed and taken advantage of in the animal world exist also in the plant world. Assuming then that the proposition is accepted by you that ears of corn looking very much alike and nominally of the same variety, when grown under conditions as nearly identical as can be made, may vary widely in the productive ability, three very important questions present themselves, viz:

1. How can we best lay hands upon the superior individuals?

2. What methods are best adapted to the perpetuation of their superior qualities?

3. How much of the superiority which we discover and attempt to perpetuate can be transmitted to subsequent generations?

SELECTION OF SEED CORN.

Taking up my first question, I answer (1) by systematic selection of seed corn, preferably after a careful examination of the plant and ear in the light of its environment; (2) by the ear-row test.

In these days when so much is being said about corn breeding, there may be a tendency to overlook what has, and what is, being accomplished by careful selection. I suppose that J. S. Leaming and James L. Reid made no use of the ear-row test or of modern corn breeding methods, but they nevertheless secured some very valuable results. They certainly succeeded most remarkably in stamping their ideal upon their handiwork; and go where you may you will find their varieties, and it is no very difficult matter to recognize them. Not only did they succeed in establishing a certain type, but what is of more practical moment, they succeeded in establishing high yielding qualities. They may have spent a lifetime in securing their results, but the results were secured. While it is probable that modern methods will yield greater results, yet it is a little early to boast.

I am unable to state just what methods Leaming and Reid practiced and, consequently, under selection, I shall give you methods which we of the Ohio Experiment Station have found productive of results.

I think that all will agree that ears of corn are not always as valuable as their appearance would indicate. Excellence may be due to hereditary influence or it may be due largely to external influences. As ordinarily selected from the shock, wagon or crib, a very large per cent. of seed ears are excellent, because they have grown under much more favorable surroundings than the average. Indeed, it is possible that if we could follow our choice, crib-selected seed ears back to the field where they grew we should find 80 to 90 per cent. of them growing one plant per hill—their superiority clearly due to the fact that the plant had the food, sunlight and moisture of two or three plants poured into it.

It is exceedingly difficult to carry from one germination to another excellence which is the sole product of environment, unless the environment is carried along with it. Many corn growers are sadly disappointed in their purchase of seed corn for this reason. What they needed was not seed from the one-hundred-bushel-to-the-acre field of some prominent seed grower, but rather the field itself and its environment. Seed corn excellence which rests mainly upon environment is not very valuable. What we want is excellence which is hereditary. By selecting seed corn upon the plant as it is ripening, one stands a much better chance to secure the latter.

PLANT SELECTION.

With this thought in view, the writer conducted tests in 1906 and 1907 in which ears selected from plants growing under normal conditions of stand and as nearly normal in other environment as it was possible to judge. were compared with other ears of the same variety and selected from the same field, but selected from the wagon, no attention being given to environment. As might be expected, the ears selected from the wagon were superior in size and general appearance.

In 1906, eight tenth-acre plots were planted from the two selections, four plots of the plant selected seed and four of the seed selected in the ordinary way. The average yield was as follows:

Four plant selection plots............	72.49 bushels per acre.
Four ordinary selection plots..........	69.26 bushels per acre.
Gain for plant selection..........	3.23 bushels per acre.

In 1907, twenty tenth-acre plots were used in this work, ten being planted from the plant selected seed and ten from the ordinary. The average yield was as follows:

Ten plant selection plots..............	89.04 bushels per acre.
Ten ordinary selection plots..........	84.64 bushels per acre.
Gain for plant selection........	4.40 bushels per acre.

In connection with the matter of seed selection, permit me to call your attention to some characters in plant and ear which I believe deserve the consideration of the corn grower.

MATURITY OR ADAPTABILITY TO LOCALITY.

Many Ohio farmers are growing corn that is too late in maturing. In seasons like the present the loss from this source is quite serious. Save for a limited area in south-central and southwestern Ohio, the seed and market condition of Ohio corn is most deplorable. It is not wise to grow a variety which will only mature in seasons of extreme length. The habit of completing growth before killing frosts are to be expected should be well fixed. The variation in the time of maturing existing between individual plants of a given variety affords ample opportunity for the selection and development of strains in which the character of early maturity is hereditary.

VIGOR.

Vigor, as evidenced by circumference of stalk below the ear, by freedom from disease, by leaf development, and especially by ability to stand upright until harvest, is a character well worthy of consideration. It is not enough that a plant produce a good ear; it should be able to carry the ear to harvest. That this character is hereditary; that some mother plants can transmit it to their offspring, while others transmit the opposite, is, I believe. pretty well established. Last year in an ear-row breeding plot at the Ohio Station, we had growing side by side, rows planted from individual ears, one of which had 56 and another 49 per cent. of its plants broken over before harvest. Between and upon either side of these were other rows of which, in one instance, not a single plant, and in two others, three and six per cent., respectively, were broken. The ability to stand upright did not result from having a lighter load to carry, for the row of which 56 per cent. of the stalks broke over yielded 75.6 bushels per acre, while the row having every plant upright yielded at the rate of 114.7 bushels per acre.

In a recent number of the *Breeders' Gazette*, the Illinois Experiment Station reports similar results from an ear-row breeding plot of this season (1907), in which rows side by side show a variation of from 5 to 86 per cent. in the number of plants going down in a severe wind storm.

So far as my observation goes, the breaking over of corn plants presents a serious problem in very many corn fields. I believe that we can largely solve it by giving attention to the vigor and stiffness of the plants from which we select our seed. In other words, we must look to heredity for its solution.

POSITION OF EAR.

In the selection of mother plants the position of the ear on the stalk should be noted and extremes avoided. The proper height of ear will have to be determined by each grower for his own conditions, remembering that the continuous selection of the higher ears tends probably toward later maturity, as also the selection of extremely low ears tends to reduce the size of plant, shorten the growing season and, of course, to decrease the yield.

The seed and market condition of corn is greatly favored if the tip of the ear points downward, thus shedding water.

WEIGHT OF EAR.

Weight of ear may mean much or little, depending upon whether environment or heredity are the controlling factors in its production. If stands of plants and conditions of fertility are uneven, and seed ears are selected without regard to such conditions, weight of ear is not especially significant. If, however, conditions are quite uniform, weight of ear is one of the best indications of productiveness one has. It should, of course, never be considered apart from maturity. Referring to our own studies of the relation of weight of seed ear to yield, we find-upon dividing all the seed ears which we have tested in our ear-row work up to this year, into two classes, viz: medium heavy and medium light, a gain in yield of 5.9 bushels per acre for the heavier ears, even though the difference in weight was in the average but 2.06 ounces per ear

Our ear-row tests of this year (1907) were composed largely of ears of very different hereditary value, owing in part to pedigree breeding work. This factor would, of course, so disturb matters that comparisons regarding the bearing of weight upon yield would have no value.

It should be stated that all comparisons as to weight of ear are made only after seed corn is thoroughly air dry.

LENGTH OF EAR.

Of the two factors which certainly have much to do with weight of ear—length and circumference—our tests this far have shown that length is of much greater significance than circumference. Ears a little above average length for a variety and locality have yielded more bushels of corn per acre than ears falling below average length; while ears of large circumference have proved lower yielders than those of medium circumference, showing that it is impossible to make up a deficiency in weight due to shortage in length by increased circumference.

SHAPE OF KERNEL.

A correct shape of kernel, what is commonly described as broadening gradually from a not too pointed tip to crown, with edges comparatively straight, and of uniform thickness, is, of course, associated with good weight of ear and high yield per acre. I do not discover that extreme length of kernel is essential to highest yield. In dividing the ears of our several ear-row tests into two lots comprised of those having kernels above average length and a little below average, we have found the yields of the two lots to be practically indentical.

UNIFORMITY.

Uniformity, or a reasonable degree of trueness to the type determined upon, is quite essential to progress in corn improvement. It should include height and habit of growth of plants; height of ear as well as size, shape, color and indentation of kernels.

This does not mean, however, that ideals are not subject to change as facts are discovered which necessitate revision.

THINGS OF MINOR IMPORTANCE.

In studying the data we have collected regarding the ears used in our ear-row work for the last three years, to see what light they will turn upon score card points, we find that in so far as number of rows and number of kernels per seed ear is concerned, any variation within ordinary limits is not at all significant; 16, 18 and 20-rowed ears appear to yield equally well.

Regarding the effect of per cent. of grain of seed ear upon yield, a medium to low per cent. (on the average of 82.7 per cent.) has given a slightly higher yield of *shelled* corn per acre than the ears ranking highest (86.7 per cent).

Regarding indentation: Ears we have styled as medium—those having nice creases in crown of kernel—have yielded quite a little higher than the rough dented ears.

There has been little difference in yield found as between cylindrical and moderately tapering ears, or between ears well filled and capped, and those having a little bare cob.

The protein content of seed ears has affected the yield but little. On the average the high protein ears have led slightly.

In giving these conclusions regarding the relation of certain characters in seed, plant and ear to yield, it should be stated that they are by no means final. We shall know much more after ten years of careful work than we do today.

GERMINATION TEST.

I should probably say a few words regarding the relation of the germination test to the improvement of the corn crop. There is no one thing a corn grower can do that will mean as much in the way of increased yields as to test the vitality of each individual ear he proposes to use for seed. Our stands of corn plants are everywhere much poorer than they should be and poorer than they need be. The germination test, if properly conducted, will greatly improve them. I think that a quite common mistake is to conduct the test under very much more favorable conditions, especially as regards temperature, than obtain in the field, and as a result we get much better germination in the box than we get later in the field. We would get better results if we conducted the test under more rigorous conditions.

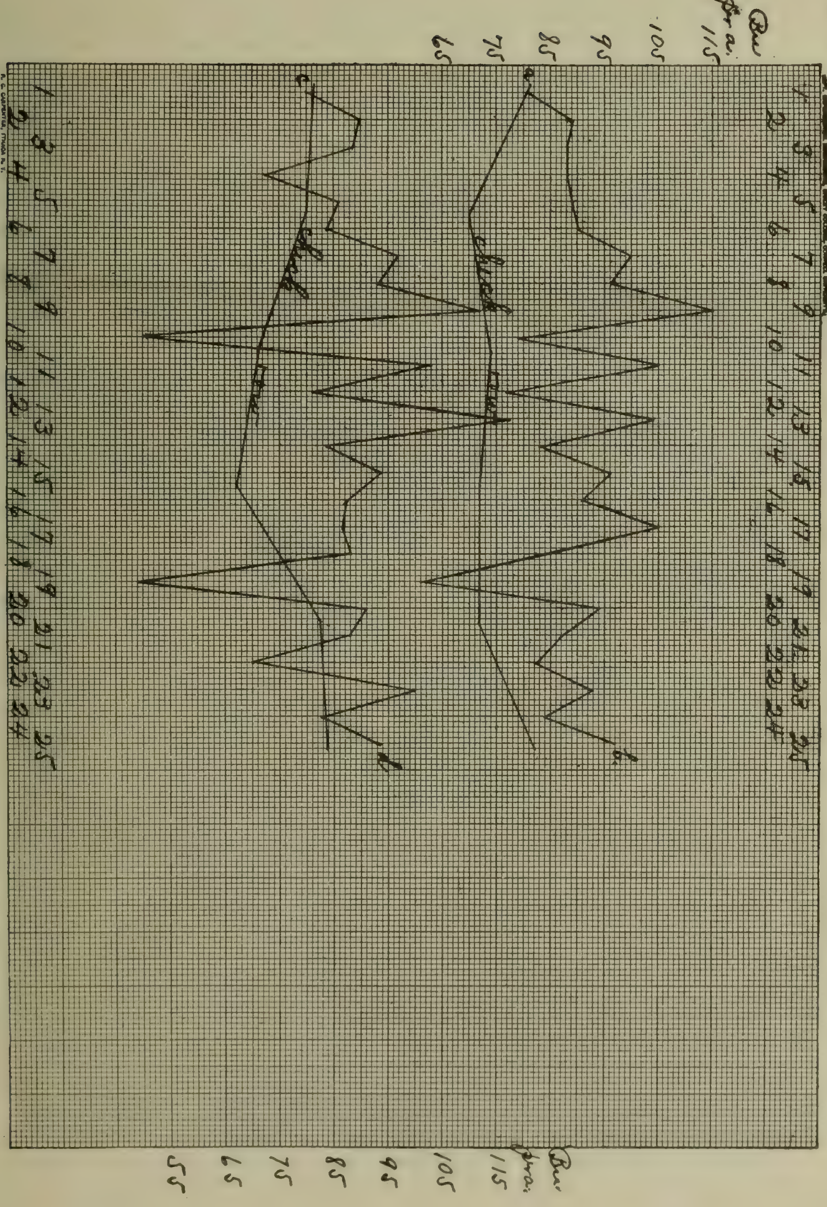
There has been a tendency in the past, I fear, to expect most too much from the germination test. It will pick out ears which have been impaired by unfavorable treatment, but I doubt very much whether it will pick out ears of hereditary merit. We have not as yet tested this matter long enough to have much to say about it, but the indications are that the germination box reveals little save the sort of care the seed corn has received.

As I pass from the consideration of selection as a means of securing ears of corn of hereditary value, let me say, gentlemen, that all the improvement in the heredity of corn of any particular moment, which has been secured up to the present time, has come from simple, though careful selection. We have been sizing up corn much as the dairymen in times past have sized up the dairy cow. We have both been looking for "signs." The invention of Dr. Babcock has done away with the necessity for depending solely upon signs on the part of the dairyman, and, thanks to Dr. Hopkins, of Illinois, the corn grower now seems to have something more sure than signs to guide him in his search for superior corn plants, viz:

THE EAR-ROW TEST.

This test consists in comparing the productiveness of a number of ears of corn grown side by side, an ear or part of an ear being planted upon each row. I hardly expect I need take any more of your time in explaining what the ear-row test is. At a meeting of this character doubtless all present are familiar with it. Suffice it to say that it is the *relative standing* of the ears tested that is of moment. Actual yields depend upon environment and go and come accordingly; comparative yields depend upon heredity.

Chart I Ear-row Test O.A.E.S. 1905



DUPLICATION OF TEST.

I should possibly call your attention to what I believe to be a desirable way of conducting this test, viz: the dividing of the seed available from each ear which is to be tested into two parts, and the planting of two widely separated, though shorter rows rather than one long row, with the thought that the second or duplicate row will serve much more effectively as a check.

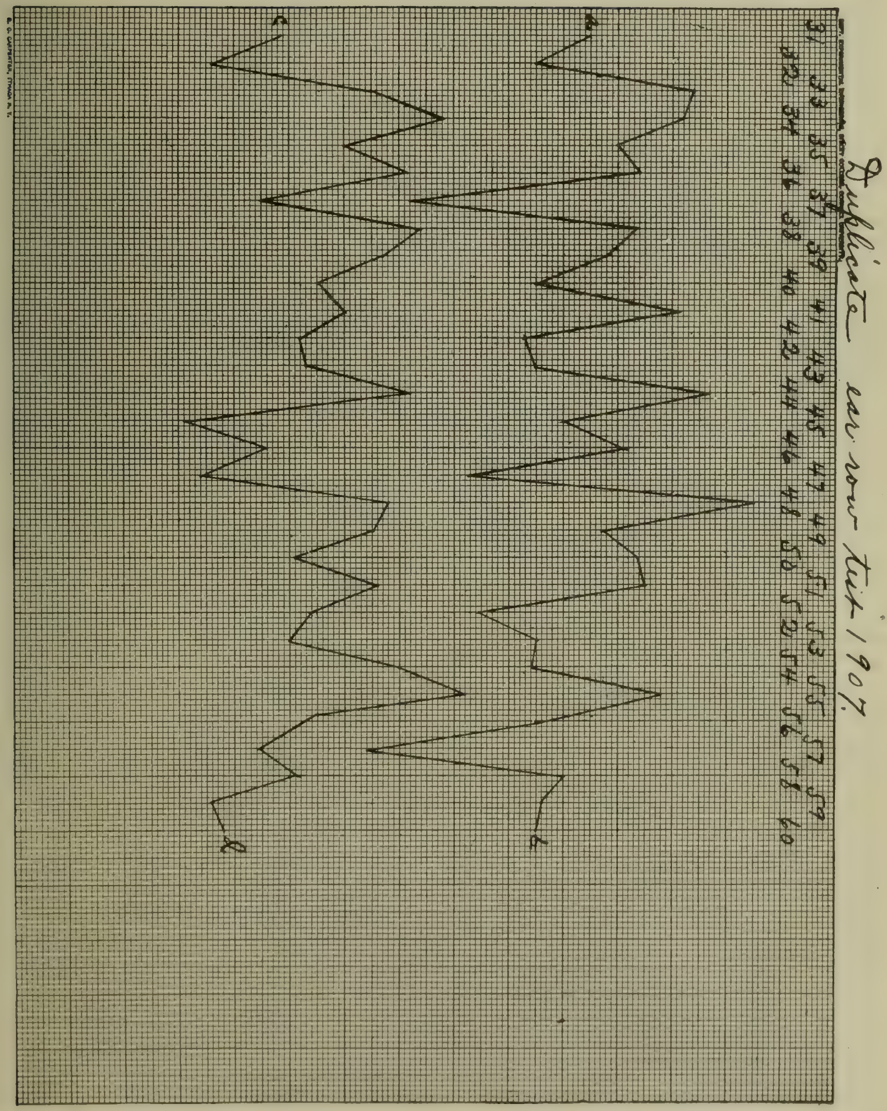
In order to show the value of the duplication of the work, permit me to call your attention to two charts showing the comparative yields of ears in two sets of rows: (See Chart I.)

Here are curves showing the comparative yields of 25 ears of corn as tested in 1905. The variation in yield is indicated by the irregular line a-b for the one plots and c-d for the duplicates.

Perhaps I should call your attention to the general correspondence between these two curves. You will note that with two important exceptions (ears 4 and 17), the ears behave as compared with their neighbors, very much the same in the two plots. This can hardly help convincing one that heredity is more largely responsible for the wide variations which we see than is environment; and yet environment does enter and hence the need for duplication.

Basing our selection upon the first plot, the highest yielding ears are 9, 17, 11 and 13. Based upon the yields of the same ears in the duplicate plot, 13, 9, 11 and 23 would be chosen. Ear 17, which stands second in yield in the first plot, is rejected by the second. Ear 23, which stands fourth in the second plot, occupies a much inferior position in the first.

Chart II


Duplicate ear row test 1907.

In Chart II we have shown the comparative yields of 30 ears as tested the past season. If we let plot one pick out the four winners we would lose ear 55, the highest yielding ear in plot two. If we let plot two decide the matter we must lose ear 48, the highest yielding ear of plot one. By taking the average yields of both rows we probably get the four best ears, namely 48, 34, 55 and 44.

Earlier in my paper I assumed that the proposition that ears of corn vary widely in their productive ability was accepted. The data which I have just given you for another purpose will serve to verify this assumption and also the utility of the ear-row test in finding them.

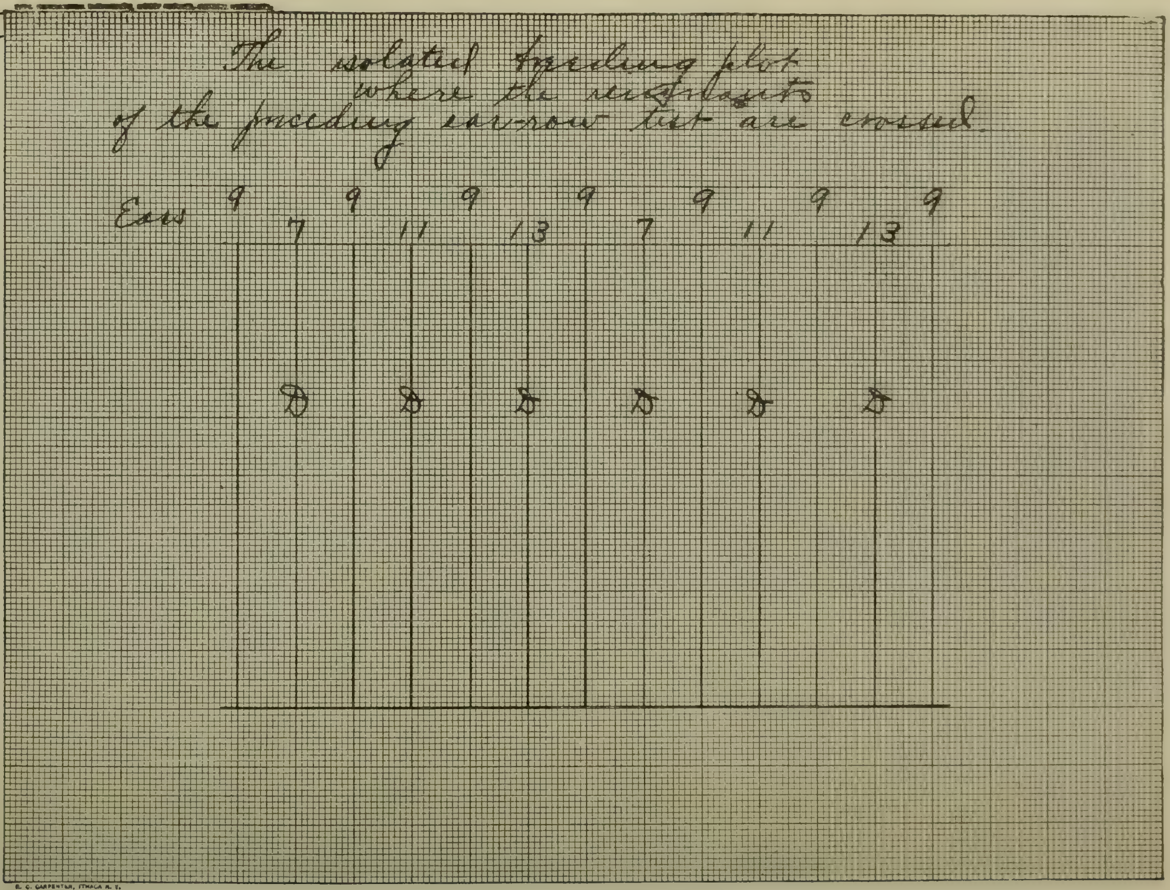
Having found ears of corn which we have reason to believe have hereditary merit, I come to my second question, viz:

WHAT METHODS ARE BEST ADAPTED TO THE PERPETUATION OF THEIR SUPERIOR QUALITIES?

Two methods of perpetuation are suggested:

(1) The selection of seed ears directly from the highest yielding rows in the ear-row test. In this way we shall know with certainty that one parent, the dam, is a superior individual, and if one-half of each row be detasseled and seed saved from the detasseled end, we shall know that it is cross bred, which has been proven to be quite essential; but with what ear it is crossd as sire we shall not know. If nearby rows are from equally high yielding ears, the cross will very likely be satisfactory; but if, as frequently happens, these nearby rows are much inferior to the dam, it would seem that the cross might be impaired. In any event, we know only one parent, either by number or performance record. The progeny of such breeding, I think, might properly be described as half blood.

Chart III



The isolated breeding plot where the remnants of the preceding ear-row test are crossed.

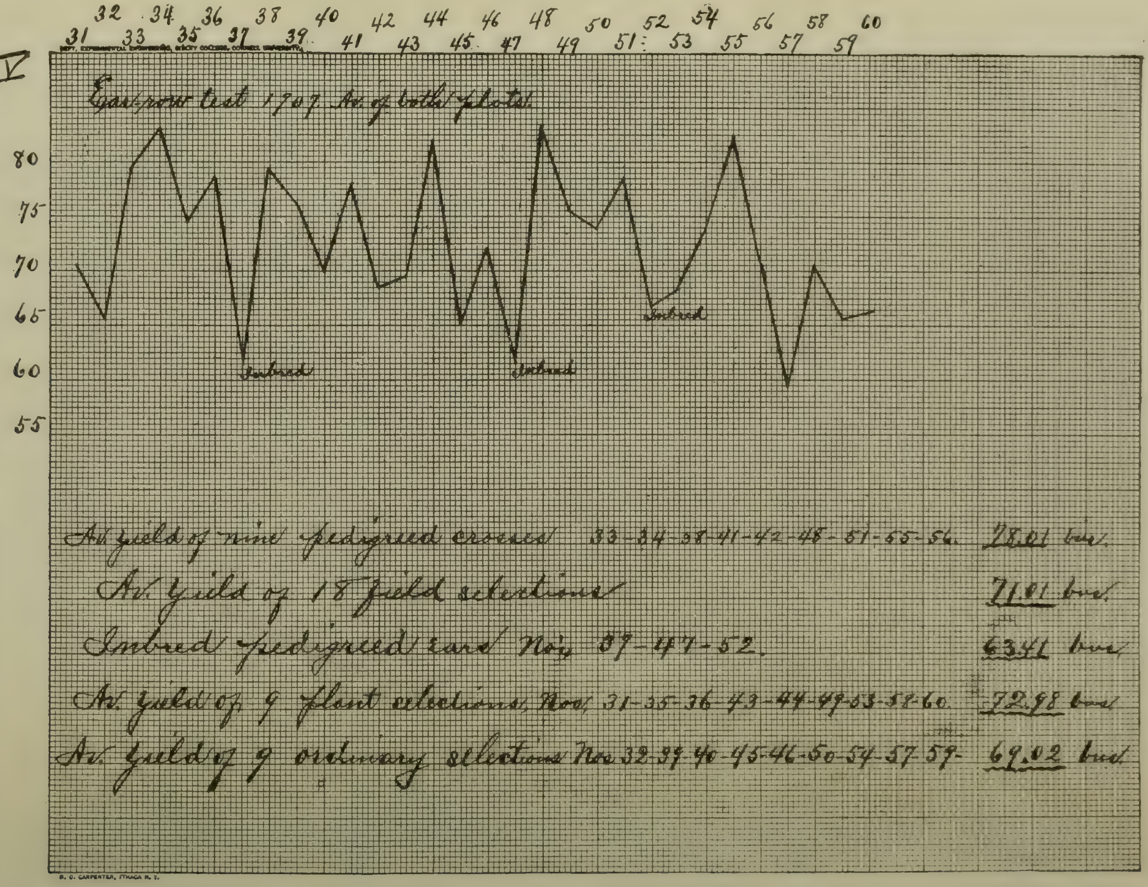
(2) The reserving of a portion of each ear which is planted in the ear-row test and when the harvest has shown which the high yielding ears are, using the remnants of these high yielding ears as the basis for future improvement.

These ear remnants may be used in several ways. Some have suggested isolating a single ear, thus building a strain or variety upon the best ear of a given test. We have some evidence along this line which I will give you from the chart in a moment (see inbred ears, Chart IV), which does not look very favorable for the first generation at any rate. Inbreeding of this sort, while likely not as disastrous as self-fertilization, seems to be decidedly ill advised.

A much better way is to cross these tested ears in an isolated breeding plot, using one ear as sire and one or more as dams. The four or five best ears of an ear-row test plot may be handled very satisfactorily in a small breeding plot (see Chart III), using one ear—perhaps the best—as sire, planting it upon every other row. Two to four different ears may be used as dams, an ear to a row, detasseling, of course, every row except the sire rows. In this way three or four distinct crosses may be secured, crosses in which both parents are known and their performance records as well.

As this system continues, the performance records, not only of sire and dam, but of grandsire and granddam, and on indefinitely, are a matter of record.

Chart IV



Av. yield of nine pedigreed crosses 33-34-38-41-42-48-51-55-56. 78.01 bu.

Av. yield of 18 field selections 71.01 bu.

Inbred pedigreed ears Nos. 37-47-52. 63.41 bu.

Av. yield of 9 plant selections, Nos. 31-35-36-43-44-49-53-58-60. 72.98 bu.

Av. yield of 9 ordinary selections Nos. 32-39-40-45-46-50-54-57-59- 69.02 bu.

THEORY AND PRACTICE.

I come now to my third question:

How much of the superiority which we discover by means of the ear-row test and attempt to perpetuate, can we hope to transmit to subsequent generations?

In answer to this question I want to call your attention to the average yields of a duplicate ear-row test of 30 ears conducted the past season at the Ohio Station (Chart IV).

Of these 30 ears 18 were new selections from the field, and consequently of unknown pedigree, and without performance records; nine were pedigreed crosses from the breeding plot of the year previous, sire and dam, and the performance record of both known; while three were inbred pedigreed ears selected from the sire rows.

The nine pedigreed crosses are Numbers 33, 34, 38, 41, 42, 48, 51, 55 and 56. With two exceptions, you will note that they stand well toward the top. You will also note that the inbred ears stand well toward the bottom.

The average yield of the nine pedigreed crosses is 78.01 bushels per acre; of the 18 field selections, 71.01 bushels per acre—a gain of seven bushels per acre for breeding.

It may not be amiss to say that the field selections were much superior to the pedigreed ears in so far as looks were concerned. The former were the pick of many bushels, while the latter of very few.

I must call your attention to ear No. 44, a new plant selection from the field, which has proven itself worthy to go into the breeding plot of next year. I have assumed in the past that such ears ought to be found each year. I believe they will continue to be found. It seems to me that the breeder who assumes that he gets hold of all the good ears he has need for in his first selection of 25 to 100 ears, thereafter depending upon "fluctuating variation" so-called for his improvement, is making a mistake. Nature does not stop working, but is continually offering us her new mutations. It would seem to be the part of wisdom to take advantage of them.

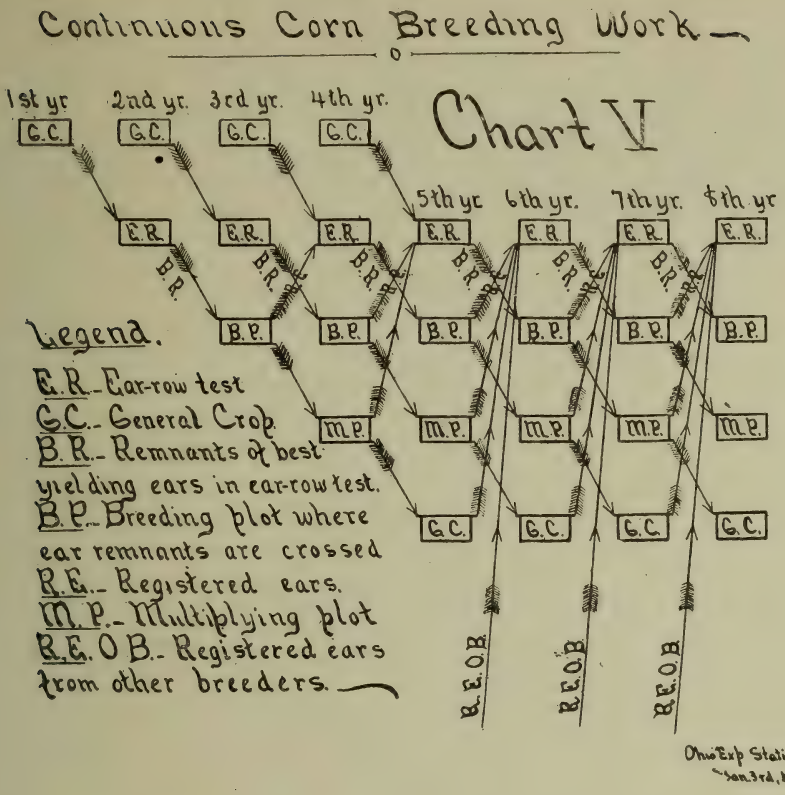
Professor Dean, of Ontario, said in an address before the National Dairy Show at Chicago, recently, that "as a matter of fact what successful breeders do is to keep a sharp lookout for the novelties which nature may send them." If this be true, as he says, in dairy breeding, how much more true in plant breeding, where the numbers of individuals worked with are so many times greater.

If, for a single season, we fail to find what we are looking for, we need not despair. They are in our fields and sooner or later will get into the ear-row test and thence into the breeding plot.

BREEDING PROBLEMS.

Are we to expect that the crosses of choice pedigreed ears and all the progeny of a given cross will be equally good? No! Referring to Chart IV, ears 34, 42 and 55 have the same sire and dam, but they are not all superior ears. Nos. 34 and 55 are "worthy sons of worthy sires." No. 42 is not, and probably for good reasons, for while the sire and dam are the same, the grandsire and dam and the greatgrandsire and dam are not.

It looks as though we had about the same problem confronting us in corn breeding as in animal breeding, and that, like the latter, we shall find that it is not only a matter of breeding, but also of *weeding*. As the dairy breeder mates sire and dam of the best dairy breeding, he finds that he misses it, shall



I say about as often as he hits it? At any rate he finds abundant use for the scales and the Babcock test in separating the good individuals from the poor. Doubtless we may expect about the same results in corn breeding. In the ear-row test we certainly have an effective method of gathering the cream. Since the cream of one ear-row test becomes, in part, the seed for the next, and this in turn is skimmed for another, it would seem that the prospects for continued improvement were good.

PLAN FOR CONTINUOUS CORN BREEDING WORK.

In conclusion, perhaps I shall outline a plan for continuous corn breeding work. In doing so let me call your attention to Chart V. In starting the work the first thing will be the selection of ears for use in the ear-row test. These should be selected the same as any seed corn, preferably upon the plant. I would, however, make this difference: I would give less attention to uniformity—forget for the moment what the perfect ear of corn is like (if you can forget something you do not know) and include ears of varying types. The second year these ears will go into the ear-row test, and the three or four that prove to be highest yielding will, the third year, be crossed in the breeding plot. Some of the pedigreed ears grown in the breeding plot will be merged (thrown together) and go into the multiplying plot of the fourth year and the general crop of the fifth year. Others of these will go into the ear-row test of the fourth year, there to meet new selections from the field. The further work is simply a repetition of what I have given you. Each year has its ear-row test and its breeding plot. It is only the latter that requires isolation, for ordinarily we would not recommend the saving of seed from the ear-row plot.

No detasseling is done in the ear-row test plot for the reason that it is a poor place to undertake to do cross breeding, even if one knew what ears or rows he wanted to cross, which, of course, he does not know until it is too late to accomplish it. The small breeding plot would seem to be the place to make crosses, and for manifest reasons.

CRITICISMS.

So far as I am aware, up to the present time the one great caution which has been sounded in corn breeding has been the matter of inbreeding. The above system would seem to provide pretty thoroughly against it. If one has doubts in regard to this it will be comparatively easy to introduce new blood into the ear-row test from other breeders of similar strains of corn which, as found worthy, would go into the breeding plot.

A recent criticism of this system of breeding (from the Connecticut Station) comes, however, from the opposite direction. It is questioned whether we may not be introducing so many new types from the field, and so frequently, that we shall never succeed in "isolating the best type."

Just what effect the introduction of the various types which have answered the requirements as regards vigor, maturity and yield set by the ear-row test will have, it will be difficult to say. In the case of a self-fertilized plant like wheat, continually enforced crossing of this sort would likely be runinous. However, with corn, which has been subject to *unrestricted* crossing for centuries, it does not seem that there would be much to fear from the introduction of a *limited* number of types which has so much in common. It is not clear that it would be desirable to isolate the best type to any further extent than would be possible in the case of the highest yielding ears of the ear-row tests. More than this would very likely tend toward inbreeding. Furthermore, is anyone ready, or likely to be ready very soon, to recognize the best type?

It is also suggsted by the Connecticut Station that it would be better to do all the ear-row testing of field selected ears at one time, testing some 300 to 500 ears the first year and basing all future work upon the four or five best ears found.

So far as the number of ears to be tested is concerned, the more the better, if the larger number can be handled with equal care. However, a test in which the conditions are not uniform is of very little value. But granting that 500 ears are handled as carefully as 50 or 100, the question arises, would it be better to test these 500 field selections of one season's growth, or would it be better to extend this work over, say five seasons? Our seasons differ mightily. The four ears that would win out such a season as this, would undoubtedly have come a long way from winning out last season or perhaps next. If one is endeavoring to build up a best strain or variety for the *average season* it would seem that many different seasons should pick out the winners whose blood is to be fused into a composite strain, adapted to average conditions. And this, I take it, is one of the strongest points in the system of breeding I have outlined to you.

Corn growers of Ohio, the problem of corn improvement is a vast one. We have hardly entered upon its solution. Of our other farm crops the same may be said. With the average yield of corn in the United States around 24 bushels per acre, and wheat at 13.5, it would seem that there is plenty of room for improvement. Much can be done to increase these yields by better fertilization and better culture. "Comparisons are odious," and I shall make none, but simply say that great possibilities for improvement are opening up before us as a result of breeding. There are Dan Patches and Brown Bessies and Roosevelts in every corn field. I believe that we have in the ear-row test a means of finding them, and in the system of breeding hastily outlined, a method of perpetuating them, in a portion, at least, of their excellence. With the hundreds of bright men at work along all plant breeding lines at all our experiment stations, with the host of wide-awake farmers of the corn belt attacking these problems with a keenness that is putting the station men on their mettle, we have reason to expect that things are going to happen during the next ten years. I await the outcome of this general attack with intense interest.

Music: The Cecelian Ladies' Quartette.

Mr. Samuel Taylor, treasurer, of Grove City, submitted and read his report, as follows:

In the following statement is presented a complete summary of the financial transactions of the Ohio State Board of Agriculture for the year 1907. The statement contains the receipts from the different sources, also the balances at the beginning and close of the year.

The disbursements from the several accounts, as herein shown, have all been on orders and checks properly signed by the president and secretary of the Board. A statement indicating the total cost of the state fair grounds and improvements thereon to date is also included in the report.

Respectfully submitted,

SAMUEL TAYLOR, *Treasurer.*

ANNUAL FINANCIAL STATEMENT OF THE OHIO STATE BOARD OF AGRICULTURE FOR THE YEAR ENDING DECEMBER 31, 1907.

RECEIPTS—MISCELLANEOUS.

To cash on hand at last report	$34,335.09	
To amount received from County Farmers' Institutes	11,000.00	
To amount received from fertilizer licenses	12,200.00	
To amount received from feed stuffs licenses	3,500.00	
To amount received from special analyses	355.25	
To amount received from Nursery and Orchard inspection	82.25	
To amount received from rent of house on State Fair grounds	50.00	
To amount received from sale of hay	298.21	
To amount received from sale of old lumber	189.87	
To amount received from rebate on cylinder	5.63	
To amount received from rent of buildings for live stock sales	500.00	
To amount received from rebate on grand stand chairs	60.00	
To amount received from interest on deposits	415.13	
		$62,991.43

RECEIPTS—STATE FAIR 1907.

To amount received from sale of full admission tickets..	$46,983.90	
To amount received from sale of children's tickets........	3,535.00	
To amount received from sale of grand stand tickets......	4,059.25	
To amount received from sale of grand stand boxes....	307.00	
To amount received from sale of wagon tickets..........	51.00	
To amount received from sale of night tickets..........	50.65	
To amount received from sale of privileges..............	8,388.00	
To amount received from sale of space..................	3,764.15	
To amount received as collection from American Trotting Association	37.75	
To amount received from Ohio Shorthorn Breeders' Association, special premiums	78.00	
To amount received from class entrance fees............	4,046.70	
To amount received from speed entrance fees............	5,348.00	
To amount received for care of exhibits................	54.00	
To amount received from Columbus Board of Trade for advertising Home Coming	4,000.00	
To amount received from deposits on county exhibits....	40.00	
To amount received from rebate on premiums............	18.00	
		$80,761.40
Total receipts		$143,752.83

DISBURSEMENTS.

By amount paid for Farmers' Institute expense........	$11,534.41	
By amount paid for fertilizer and feed stuffs inspection and analyses	6,377.05	
By amount paid for general department expense..........	526.16	
By amount paid for improvements, repairs and expense of grounds	22,632.50	
By amount paid for material and supplies for Fair......	716.47	
By amount paid for printing and advertising............	12,035.76	
By amount paid for expense of Fair departments........	3,450.71	
By amount paid for general Fair expense..............	7,685.25	
By amount paid for premiums........................	30,061.80	
By amount paid for expenses of members..............	2,117.75	
By amount paid for outstanding checks of 1906 issue....	1,037.32	
		$98,175.18
Less outstanding checks		1,195.35
		$96,979.83
By balance		46,773.00
		$143,752.83

COST OF FAIR GROUNDS, BUILDINGS AND IMPROVEMENTS THEREON, TO DATE.

Cost of State Fair Grounds and Iprovements at close of 1906	$667,557.98	
Expended for repairs and improvements, 1907..........	74,630.98	
		$742,188.96

President Bailey: If there are any resolutions, you should hand them in to the committee, who are ready to receive them. We will now hear the report of the auditing committee, by Mr. C. W. McFarland, of Galion.

REPORT OF AUDITING COMMITTEE.

The Ohio State Board of Agriculture:

Gentlemen:—The undersigned auditing committee, after careful examination of the books, vouchers, checks and orders pertaining to the financial transactions of the Ohio State Board of Agriculture for the year 1907, begs leave to report as follows:

The balance remaining to the credit of the Ohio State Board of Agriculture in its bank funds at the close of the year 1906, was $34,335.09, while the receipts from all sources during the year 1907 were $143,752.83. The expenditures during the same period were $96,979.83, leaving a balance to its credit at the close of the year 1907 of $46,773.00. The receipts and expenditures are all properly shown on the financial records, and by carefully comparing the vouchers now on file and the checks or orders issued in payment, all were found to agree.

In accordance with a resolution adopted by the Board your committee superintended the printing and distribution of the admission tickets for the 1907 State Fair and begs to report that, after carefully checking the tickets remaining unsold, the number of paid admissions correspond correctly with the receipts thereof as returned by the treasurer to your committee.

The contracts for the sale of concessions at the last exhibition were carefully compared with the receipts reported for the sale of same and found to be correct.

On pages 420 to 425, inclusive, of the Financial Record of the Board is entered a summary of all receipts and expenditures for the year.

Your committee also examined the transactions of the Board on account of the several state appropriations and found all correctly recorded, with proper vouchers on file to cover each expenditure.

Respectfully submitted,

A. P. Sandles,
C. W. McFarland,
P. G. Ewart.
Auditing Committee.

The chair called for the report of the credentials committee.

REPORT OF COMMITTEE ON CREDENTIALS.

To the Ohio State Board of Agriculture:

Your Committee on Credentials begs leave to submit the following report. Your committee met on the stage here at the close of the morning session, and remained until you had all gone to lunch. Nobody claimed any seat that he was not entitled to; nobody appeared before your committee to dispute the seat of any other person; so we take it for granted that among the honest men representing the societies of the State of Ohio there are no contests.

Your committee's attention was called to the report of the secretary, and we found opposite every county the name of the officer that represented it, or his accredited delegate, and the roll call of counties will determine who they are.

All of which is respectfully submitted.

Hon. R. M. Eaton,
E. T. Blackburn,
J. A. Knapp,
Committee.

The chair called for the report of the committee on resolutions, which was submitted and read by its chairman, Mr. W. H. Hanna, as follows:

REPORT OF COMMITTEE ON RESOLUTIONS.

To the Ohio State Board of Agriculture

Gentlemen, your committee begs leave to submit the following for your consideration:

Resolved: That we most heartily commend the efficient manner of conducting the Ohio State Fair by the Ohio State Board of Agriculture.

Resolved: That we heartily thank the city of Columbus for favors and courtesies extended.

Resolved: That we extend a rising vote of thanks to the Cecelian Ladies' Quartette for the beautiful music with which our sessions have been enlivened.

Resolved: That we most heartily appreciate the interest shown by Governor A. L. Harris in matters pertaining to the interest of agriculture, and extend for such interest shown and the splendid address delivered by him today a rising vote of thanks.

Resolved: That the legislature of our state in support of the Agricultural College, State Board of Agriculture and Ohio Experiment Station merits the hearty commendation of the farmers of the state. We urge a continuance of such support and its increase so far as consistent with proper economy and with proper regard for other state interests.

Resolved: That we deem the common quail the farmers' friend, and that it should be removed from the class of game birds and accorded the same protection that is given other song birds. Be it

Resolved: By the Ohio State Board of Agriculture at its annual meeting in Columbus, January 16, 1908, that we earnestly petition the General Assembly of the State of Ohio, now in session, to enact into law a county local option bill. The urgent demand throughout the state, especially accentuated in the rural disricts, because of increasing interurban lines of traffic reaching into all parts of the county, makes the enactment of this law of especial interest to the farmer, because our boys are reaching county seats and other cities in the county where intoxicating liquors are sold, and as long as the people of the entire county are taxed to pay the expenses of the ravages of the traffic, they should be given opportunity to say whether that burden shall exist or be relieved of that part of the burden of taxation which is caused by the traffic. We believe that the principle embodied in this county local option bill is American and one of majority rule, and the settlement of this question should be exercised by the people, whose inherent right it is to settle this question.

Resolved: That we deeply appreciate the responsibilities imposed by the statutes of Ohio upon the State Board of Agriculture in placing upon said Board the duty of making the rules governing county agricultural societies; and realizing the difficulties therein, owing to local conditions, we congratulate the Board upon its efforts to meet the requirements pertaining thereto, and would recommend the strictest adherence to said rules by the various societies so far as possible.

W. H. HANNA,
REUBEN RANKIN,
C. A. GRAHAM,
Committee.

The question was taken separately upon the adoption of each of the resolutions contained in the foregoing report, and each was adopted unanimously; the resolution of thanks to the Cecelian Ladies' Quartette and the resolution of thanks to Governor Harris being accorded the special compliment of a rising vote.

President Bailey: Gentlemen, the election of two members of the Board for the term of five years next ensuing is now in order. The nominations presented this morning are now before you, as shown upon the printed tickets. Before we proceed to ballot I will appoint Messrs. R. Y. White, of Muskingum, and A. E. Shaffer, of Auglaize County, as tellers. There are seven names upon the ballots, as follows:

R. J. Tussing, Franklin County; C. W. Haines, Montgomery County; George W. Carey, Warren County; G. E. Jobe, Greene County; W. J. Pontius, Stark County; P. G. Ewart, Summit County; Homer Southard, Union County. You will mark off all but the two that you wish to vote for.

Mr. W. J. Pontius, Stark County: Mr. President and gentlemen of the convention, inasmuch as there are a great number of candidates, all of whom are good men, and inasmuch as there has been nominated a very efficient and accomplished gentleman from my section of the State, I wish to withdraw my name from your further consideration at this time.

The withdrawal of the name of Mr. Pontius was acceded to.

A delegate inquired of the chair as to who was entitled to vote under the rules.

President Bailey: Regular delegates authorized to vote are the presidents of agricultural societies or delegates representing such societies, or delegates appointed by presidents of county farmers' institutes in counties where there are no agricultural societies.

The election of members then proceeded in due course, the first ballot resulting as follows:

Total number of votes cast, 66; necessary to a choice, 34.

Tussing 8; Haines 22; Carey 8; Jobe 25; Ewart 54; Southard 17.

The president, after announcing the result of the ballot, stated that Hon. P. G. Ewart, having received a majority of the votes cast, was elected as a member for the ensuing term of five years.

The second ballot being taken resulted as follows:

Total number of votes cast, 67; necessary to a choice, 34.

Tussing 2; Haines 20; Carey 2; Jobe 28; Southard 15.

The chairman announced no election and called for a third ballot to be taken.

The names of Messrs. Tussing and Carey were withdrawn from the contest.

The third ballot having been taken resulted as follows:

Total number of votes cast, 65; necessary to a choice, 33.

Haines 19; Jobe 31; Southard 15.

There being no election the chair called for a fourth ballot, which resulted as follows:

Total number of votes cast, 66; necessary to a choice, 34.

Haines 17; Jobe 38; Southard 11.

The chair announced that Mr. Jobe having received a majority of the votes cast, was duly elected for the ensuing term of five years.

No further business offering, the Board adjourned *sine die.*

Eighteenth Annual Report

OF

Farmers' Institutes

HELD IN OHIO IN

1907-1908

UNDER THE AUSPICES OF THE

Ohio State Board of Agriculture

EIGHTEENTH ANNUAL REPORT

—OF—

FARMERS' INSTITUTES

HELD IN OHIO DURING THE SEASON OF 1907-1908.

The eighteenth annual report of Ohio's Farmers' Institutes held under the auspices of the State Board of Agriculture is most gratifying to all interested in promoting our agricultural interests.

Under the amended institute law each county in the state is entitled to four institute meetings, the state generously providing $31.25 for each institute, to aid in defraying the expense of these meetings, making a total of $11,000.00 available for this purpose. During the season just closed, however, the number of institutes assigned was largely increased over former years, necessitating the employment of lecturers for longer periods than heretofore; hence the amount expended in this educational work exceeded the sum available under the law, and to meet this deficiency we were forced to appropriate money from the agricultural fund.

The progressive agriculturists from every community are now fully awake to the importance and educational value of a farmers' institute, and while this season many counties of the state did not avail themselves of the full quota of institutes as provided by law, I have no doubt from the interest displayed, and the number of requests for such meetings now on file, that another year four institutes will be held in each county, or a total of three hundred and fifty-two institutes for the state.

For the season of 1907-08 three hundred and twenty-one institutes were assigned, and forty lecturers were employed by the State Board. Of the number of institutes originally assigned all were held as scheduled, with the exception of four, which were canceled owing to emergencies arising over which local committees had no control. In addition to the institutes receiving state aid, seventeen independent farmers' institutes have made report of their meetings to this department.

The reports of the local officers of the institutes show that this season there has been a marked increase in the average attendance at each session of their various meetings, while without exception they note the fact that the interest in the meetings was such that they feel justified in requesting the state board to again assign them an institute next season. From the reports filed by the state lecturers we are assured that the institutes are in charge of thoroughly competent officials, selected by their co-workers for their display of executive ability and leadership in the agriculturists' onward march of progress.

In compliance with the provisions of the law governing farmers' institutes, published herein, are reports covering the receipts and expenditures on account of the institute work during the season, also selected papers of value which were read at different meetings. In this connection we desire to state that so many excellent papers were submitted to the committee for publication that the matter of proper selection of same was most difficult, and a number of meritorious papers were necessarily omitted because of limited space.

We take this opportunity of extending our sincere thanks to all who by their co-operation have aided in upbuilding our institutes, and especially is credit due the press of the state for its liberality in giving publicity to the meetings.

OHIO STATE BOARD OF AGRICULTURE,
By T. L. Calvert, *Secretary.*

Columbus, March 31, 1908.

FINANCIAL STATEMENT.

The following statement shows the receipts and disbursements of the Ohio State Board of Agriculture on account of farmers' institutes, held in compliance with the provisions of Sections 3713-1 to 3713-6 of the Revised Statutes of Ohio.

RECEIPTS.

Amount collected from the eighty-eight counties of the state under Section 3713-3 R. S.	$11,000 00

DISBURSEMENTS.

For per diem and expenses of lecturers, as follows:

Allen F L., Kinsman, forty-eight days	$392 85
Baldwin, S. J., Tallmadge, forty-four days	392 45
Begg, John, Columbus Grove, fifty-two days	397 05
Blackford, Frank, Eldorado, forty-eight days	392 25
Blue P Z., Hamler, four days	29 75
Brigham, J. S, Bowling Green forty-four days	372 40
Brown, John T, Mechanicsburg, twenty-four days	191 96
Buchanan, J. L., Sherodsville, thirty-two days	265 15
Culbertson, Wm. H., New Concord, sixteen days	142 15
Davis, J P, Sheridan, Ind., twenty-five days	226 47
Dobie, J Al., Wapakoneta, forty-eight days	391 70
Farnsworth, W. G., Waterville, forty days	310 77
Gordon, J. F., Jamestown, forty-four days	354 75
Gould, John. Aurora Station, ten days	69 10
Harsh, D. D., Minerva, forty-two days	339 15
Hayne, R. A, Adena twenty-two days	196 45
Houskeeper, G C., Bowling Green, forty-eight days	386 15
Huber, A. A., Hicksville, forty-eight days	403 43
Johnson, Solomon, Stryker thirty days	252 60
Judy, A H.. Castine, eighteen days	161 55
McIntire, Charles, Chandlersville, thirty-eight days	327 70
Markley, Horatio, Mt. Gilead thirty-six days	285 20
Miller, H. P, Sunbury eighteen days	140 85
Moffit Nate L., Peoria, five days	38 65
Montgomery, Cary W., Newark. thirty-two days	261 00
Myers, Allen O. Worthington, twenty-six days	256 35
Nicodemus, J W, Van Wert, thirty-four days	261 65
Riggs, Ernest J., Raccoon Island, sixteen days	126 50
Roudebush, Lowell New Richmond, thirty days	253 70
Scott, Geo. E., Mt Pleasant, fifty days	423 75
Shawver, John L., Bellefontaine, thirty-six days	292 75
Sidle, J C, Wooster, nineteen days	151 60
Spencer, L. G, Warren, thirty days	229 55
Starcher, G. C., Weston, W Va, twenty-nine days	239 61
Strode, S. E., Galion, twenty-eight days	235 85
Taber, L. J., Barnesville, twelve days	103 70
Terry T. B Hudson, one day	10 80

Thomas, M. C., Mingo, forty-four days	375 02
Van Alstyne, Edward, Kinderhook, N. Y., eighteen days	232 80
Wagner, C. R., Arlington, fifty-four days	453 90
Zinn, W. D., Philippi, W. Va., thirty-six days	348 95
Expenses of lecturers and members attending meetings of the Ohio State Board of Agriculture	326 72
Expense of editing addresses for publication	60 00
Printing and postage (estimated)	500 00
Total	$11,604 73

NOTE.—Owing to the fact that a greater number of institutes was held during the past season than in former years, the fund provided by law for the expense of conducting these institutes having been found inadequate to meet expenses of same, we were compelled to appropriate money from the agricultural fund to meet this deficiency.

FARMERS' INSTITUTES HELD IN OHIO DURING THE SEASON BEGINNING DECEMBER 2, 1907, AND ENDING FEBRUARY 29, 1908

NOTE.—The Institute Law, as amended by the General Assembly, March 31, 1906, provides for four institutes in each county, and not to exceed thirty-one dollars and twenty-five cents for the expenses of each, but requests must be filed with the State Board of Agriculture before September 1st of each year for such institutes. All societies should be properly organized before asking for the assignment of an institute.

Counties.	Institutes Held.		Average Attendance Reported Each Session.	Local Expenses Covered by Allowance, as per Amended Institute Law.
	Where.	When.		
Adams	Peebles	December 20–21	400	$31 00
	Wamsley	January 6–7	100	31 25
	North Liberty	January 20–21	300	27 00
Allen	Lafayette	December 6–7	350	31 25
	Spencerville	January 6–7	183	31 25
	Bluffton	February 10–11	450	31 25
	Delphos	February 24–25	600	31 25
Ashland	Jeromeville	December 6–7	230	31 11
	Loudonville	December 20–21	200	31 25
	Nova	December 30–31	450	31 25
	Polk	February 3–4	300	31 25
Ashtabula	Orwell	December 2–3	100	16 28
	Andover	December 18–19	175	31 25
	Geneva	January 6–7,	200	24 68
	Pierpont	January 29–30	350	31 25
Athens	Amesville	December 9–10	210	31 25
	Albany	January 6–7	110	30 01
	Athens	January 27–28	400	31 25
	Coolville	February 26–27	225	31 25
Auglaize	Waynesfield	December 16–17	250	25 03
	New Knoxville	January 3–4	250	31 25
	Buckland	February 7–8	250	31 25
	New Bremen	February 17–18	175	31 25

FARMERS' INSTITUTES HELD IN OHIO DURING THE SEASON BEGINNING DECEMBER 2, 1907, AND ENDING FEBRUARY 29, 1908—Continued.

Counties.	Institutes Held.		Average Attendance Reported Each Session.	Local Expenses Covered by Allowance, as per Amended Institute Law.
	Where.	When.		
Belmont	Barnesville	December 16–17	175	$31 25
	Colerain	January 22–23	230	31 25
	Loydsville	Jan. 31-Feb. 1	200	31 25
	Morristown	February 10–11	250	31 25
Brown	Sardinia	December 2–3	500	31 25
	Decatur	January 3–4	250	31 08
	Mount Orab	January 22–23	250	31 25
	Fayetteville	February 3–4	450	31 25
Butler	Monroe	December 6–7	260	27 07
	Hamilton	December 18–19	350	31 25
	Oxford	January 10–11	150	31 25
	Collinsville	January 27–28	250	31 25
Carroll	Carrollton	December 9–10	200	31 25
	Malvern	January 27–28	375	28 00
	Magnolia	February 7–8	225	28 62
	Sherodsville	February 26–27	350	24 50
Champaign	Magrew	December 16–17	200	31 25
	Kingscreek	December 30–31	400	31 25
	Mechanicsburg	Jan. 31-Feb. 1	250	31 25
	Mingo	February 17–18	200	31 25
Clark	Donnelsville	December 13–14	350	31 25
	Selma	December 30–31	145	31 25
	Tremont City	January 6–7	175	30 70
	Catawba	January 20–21	200	31 25
Clermont	Newtonsville	December 4–5	300	29 30
	Milford	January 1–2	900	30 81
	Felicity	January 24–25	350	31 25
	Bethel	Jan. 31-Feb. 1	400	31 25
Clinton	Clarksville	December 9–10	280	31 25
	New Vienna	December 20–21	300	31 25
	Wilmington	February 7–8	535	31 25
	Sabina	February 21–22	550	31 25
Columbiana	Rogers	December 30–31	600	31 25
	Lisbon	January 10-11	500	31 25
	New Waterford	February 5–6	300	31 25
	Damascus	February 26–27	400	31 25
Coshocton	Keene	December 11–12	225	31 25
	Nellie	January 1–2	300	31 25
	Fresno	January 29–30	320	31 25
Crawford	Tiro	December 2–3	400	31 25
	Bucyrus	December 16–17	450	31 25
	Galion	January 10–11	700	31 25
	Crestline	January 29–30	500	31 25
Cuyahoga	Strongsville	December 2–3	200	31 25
	Mayfield	December 11–12	225	31 25
	Brecksville	December 20–21	190	31 25
	Dover	January 22–23	375	31 25

FARMERS' INSTITUTES HELD IN OHIO DURING THE SEASON BEGINNING DECEMBER 2, 1907, AND ENDING FEBRUARY 29, 1908—Continued.

Counties.	Institutes Held.		Average Attendance Reported Each Session.	Local Expenses Covered by Allowance, as per Amended Institute Law.
	Where.	When.		
Darke	Gettysburg	December 2–3	500	$31 25
	New Madison	December 20–21	400	31 25
	Arcanum	January 6–7	700	31 25
	Palestine	January 22–23,	300	31 25
Defiance	Hicksville	December 11–12	325	31 25
	Sherwood	January 22–23	250	31 25
	Farmer	February 10–11	200	30 19
	Defiance	February 23–24	250	31 25
Delaware	Delaware	December 6–7	350	31 25
	Sunbury	January 29–30	300	31 25
Erie	Castalia	January 10–11	125	31 25
	Berlin Heights	January 24–25	275	31 25
	Milan	February 3–4	250	31 25
Fairfield	Amanda	December 4–5	190	31 25
	Baltimore	January 3–4	360	31 25
	Bremen	January 29–30	480	31 25
	Carroll	February 28–29.	450	31 25
Fayette	Jeffersonville	December 11–12	700	31 00
	Good Hope	December 18–19	400	31 25
	Moons	January 22–23	400	31 25
Franklin	Groveport	December 20–21	300	31 25
	Westerville	December 30–31	250	31 25
	Pleasant Corners	January 27–28	300	31 00
	Hilliard	February 14–15	200	31 25
Fulton	Wauseon	December 4–5	500	30 60
	Delta	January 8–9	425	31 25
	Fayette	January 29–30	450	31 25
	Swanton	February 19–20	200	27 83
Gallia	Eno	December 4–5	200	31 25
	Rio Grande	January 10–11	300	31 25
	Vinton	February 5–6	225	31 25
	Boggs	February 19–20	125	24 00
Geauga	Burton	December 13–14	200	9 50
	Thompson	January 3–4	500	31 25
	Middlefield	January 22–23	200	31 25
Greene	Bellbrook	December 11–12	210	31 25
	Cedarville	January 8–9	300	31 25
	Yellow Springs	January 22–23	700	31 25
	Jamestown	February 14–15	300	31 25
Guernsey	Byesville	December 9–10	600	31 25
	Cumberland	January 20–21	300	31 25
	Antrim	January 27–28	225	31 25
	Fairview	February 5–6	200	31 23
Hamilton	Newtown	December 6–7	150	31 25
	Harrison	December 30–31	180	31 25
	Glendale	January 29–30	200	31 25
	Blue Ash	February 10–11	350	31 25
Hancock	Benton Ridge	December 13–14	450	31 25
	Arcadia	January 1–2	400	31 15
	Arlington	January 24–25	400	31 25
	McComb	February 19–20	500	31 25

FARMERS' INSTITUTES HELD IN OHIO DURING THE SEASON BEGINNING DECEMBER 2, 1907, AND ENDING FEBRUARY 29, 1908—Continued.

Counties.	Institutes Held.		Average Attendance Reported Each Session.	Local Expenses Covered by Allowance, as per Amended Institute Law.
	Where.	When.		
Hardin	Forest	December 18–19	225	$31 25
	Ada	December 30–31	600	31 25
	Kenton	January 6–7	200	31 00
Harrison	Freeport	December 6–7	250	31 25
	Piedmont	February 7–8	200	31 25
	Jewett	February 14–15	75	27 02
	Scio	February 28 29	100	30 95
Henry	Holgate	December 13–14	350	31 25
	Sharon	January 10–11	550	31 25
	Florida	January 22–23	400	31 25
	Deshler	February 7–8	325	31 25
Highland	Hillsboro	December 18–19	500	31 25
	Rainsboro	January 1–2	450	31 25
	Mowrystown	February 5–6	450	31 25
	Leesburg	February 19–20	450	31 25
Hocking	Logan	December 18–19	350	31 25
	Laurelville	January 8–9	300	31 25
Holmes	Killbuck	December 18–19	125	14 85
	Holmesville	January 6–7	375	31 25
Huron	Greenwich	December 11–12	425	31 25
	Wakeman	January 1–2	250	31 21
	East Townsend	Jan. 31-Feb. 1	200	31 25
	North Fairfield	February 28–29	450	31 25
Jackson	Wellston	December 13–14	25	31 25
	Jackson	January 1–2	200	31 15
	Rocky Hill	February 3–4	200	22 63
	Cove	February 14–15	90	31 25
Jefferson	Mt. Pleasant	December 4–5	250	31 25
	Bloomingdale	January 29–30	225	31 25
	Richmond	February 12–13	600	31 25
	Smithfield	February 28–29	250	31 12
Knox	Esto	December 9–10	250	31 25
	Ankenytown	December 20–21	200	31 00
	Mt. Vernon	December 30–31	300	31 25
	Centerburg	Jan. 31-Feb. 1	200	31 25
Lake	Painesville	December 16–17	200	31 25
	Perry	January 27–28	300	28 60
Lawrence	Arabia	December 2–3	200	31 25
	Labelle	December 30–31	125	31 25
	South Point	February 17–18	150	21 50
Licking	Alexandria	December 2–3	260	31 25
	Croton	December 18–19	300	31 25
	Brownsville	January 10–11	125	31 25
	Utica	January 20–21	200	31 25
Logan	Degraff	December 11–12	300	31 25
	Bellefontaine	January 3–4	400	29 85
	East Liberty	February 3–4	350	31 25
	Rushsylvania	February 26–27	210	31 25

FARMERS' INSTITUTES HELD IN OHIO DURING THE SEASON BEGINNING DECEMBER 2, 1907, AND ENDING FEBRUARY 29, 1908—Continued.

Counties.	Institutes Held.		Average Attendance Reported Each Session.	Local Expenses Covered by Allowance, as per Amended Institute Law.
	Where.	When.		
Lorain	Rochester	December 4–5	240	$31 25
	North Ridgeville	January 8–9	300	31 25
	Pittsfield	January 24–25	160	30 75
	Columbia Center	Jan. 31-Feb. 1	400	31 02
Lucas	Berkey	December 2–3	375	21 72
	Monclova	January 6–7	250	25 15
	Whitehouse	January 27–28	350	27 25
	Richfield Center	February 17–18	220	27 00
Madison	West Jefferson	December 13–14	200	31 25
	Plain City	December 18–19	210	31 25
	London	January 10–11	400	31 25
	Mt. Sterling	January 27–28	400	31 22
Mahoning	North Lima	December 6–7	350	31 25
	Berlin Center	January 10–11	200	31 25
	Canfield	February 3–4	150	31 25
	North Jackson	February 24–25	200	31 25
Marion	Caledonia	December 4–5	350	24 50
	Agosta	January 3–4	250	31 25
	Marion	Jan. 31-Feb. 1	175	29 50
	Waldo	February 21–22	300	31 25
Medina	Chatham	December 13–14	275	31 25
	Hinckley	January 6–7	225	23 15
	Poe	January 20–21	400	31 25
	Brunswick	February 10–11	250	22 10
Meigs	Racine	December 11–12	200	31 00
	Rutland	January 8–9	200	31 00
	Chester	January 29–30	300	23 00
	Dyesville	February 21–22	225	22 85
Mercer	Celina	December 18–19	150	30 40
	Coldwater	January 3–4	150	10 85
	Fort Recovery	January 20–21	475	31 25
	Neptune	February 5–6	200	28 35
Miami	Piqua	December 13–14	140	31 25
	Tippecanoe City	December 30–31	275	31 25
	Casstown	January 29–30	300	30 00
	West Milton	February 19–20	600	31 25
Monroe	Beallsville	December 2–3	150	31 25
Montgomery	Germantown	December 11–12	450	31 25
	Trotwood	January 1–2	600	31 25
	Vandalia	January 6–7	400	31 25
	Centerville	January 8–9	400	31 25
Morgan	Cloud	December 11–12	400	28 15
	Chesterhill	January 6–7	400	30 33
	Pleasant Valley	December 18–19	100	22 15
Morrow	Mt. Gilead	December 16–17	600	31 25
	Iberia	January 27–28	150	31 25
	Marengo	February 14–15	150	24 16
	Cardington	February 28–29	350	31 25

FARMERS' INSTITUTES HELD IN OHIO DURING THE SEASON BEGINNING DECEMBER 2, 1907, AND ENDING FEBRUARY 29, 1908—Continued.

Counties.	Institutes Held.		Average Attendance Reported Each Session.	Local Expenses Covered by Allowance, as per Amended Institute Law.
	Where.	When.		
Muskingum	Adamsville	December 16–17	300	$31 25
	White Cottage	December 20–21	800	31 25
	Norwich	January 3–4	100	31 25
	Chandlersville	January 24–25	225	31 25
Noble	Renrock	December 18–19	190	24 21
	Dexter City	January 24–25	100	12 26
	Summerfield	February 12–13	200	31 25
	Sharon	February 24–25	175	22 83
Ottawa	Elmore	December 2–3	140	31 25
	Port Clinton	January 27–28	300	31 25
Paulding	Haviland	December 2–3	200	31 25
	Antwerp	December 30–31	200	31 25
	Oakwood	January 20–21	350	31 25
	Payne	February 12–13	300	30 40
Perry	Glenford	December 6–7	225	31 25
	Unity	December 20–21	120	31 25
	Rehoboth	January 3–4	200	31 25
	Sayre	January 22–23	150	31 25
Pickaway	Derby	December 16–17	250	31 25
	Ashville	January 1–2	375	31 25
	Williamsport	January 24–25	400	31 25
	Tarlton	February 17–18	200	29 25
Pike	Tennyson	December 16–17	157	21 51
	Beaver	January 10–11	200	26 75
	Piketon	February 7–8	175	27 00
	Latham	February 24–25	200	31 25
Portage	Garrettsville	December 13–14	40	30 10
	Randolph	January 1–2	275	31 25
Preble	Camden	December 4–5	250	31 25
	New Paris	January 8–9	275	18 98
	West Manchester	February 12–13	500	31 25
	Eaton	February 21–22	400	31 25
Putnam	Leipsic	December 4–5	400	31 25
	Continental	January 8–9	400	31 25
	Rimer	January 24–25	450	31 25
	Kalida	Jan. 31-Feb. 1	225	25 50
Richland	Bellville	December 9–10	275	31 00
	Adario	January 24–25	365	31 00
Ross	Frankfort	December 9–10	170	31 25
	South Salem	January 3–4	350	31 25
	Bainbridge	January 20–21	190	31 25
Sandusky	Clyde	December 4–5	400	31 25
	Fremont	December 20–21	850	31 25
	Bellevue	January 20–21	200	31 25
Scioto	Mount Joy	December 30–31	160	11 05
	Haverhill	January 8–9	200	31 25
	Scioto	Jan. 31-Feb. 1	275	31 25
Seneca	Fostoria	December 6–7	500	31 25
	Bloomville	December 18–19	350	29 40
	Greenspring	January 8–9	450	31 25
	Tiffin	January 29–30	600	31 25

FARMERS' INSTITUTES HELD IN OHIO DURING THE SEASON BEGINNING DECEMBER 2, 1907, AND ENDING FEBRUARY 29, 1908—Concluded.

Counties.	Institutes Held.		Average Attendance Reported Each Session.	Local Expenses Covered by Allowance, as per Amended Institute Law.
	Where.	When.		
Shelby	Jackson Center	December 9–10	275	$31 25
	Sidney	January 1–2	260	31 25
Stark	Marlboro	December 11–12	225	31 25
	New Berlin	December 30–31	240	31 25
	Osnaburg	February 7–8	200	31 25
	Wilmot	February 14–15	175	31 25
Summit	Copley	December 9–10	150	26 13
	Nimisila	January 8–9	400	31 25
	North Springfield	January 20–21	300	31 25
	Bath	February 12–13	250	31 25
Trumbull	Fowler	December 4–5	100	30 55
	Newton Falls	December 20–21	225	31 25
	Vienna	January 8–9	200	30 47
	Mesopotamia	Jan. 31-Feb. 1	150	31 00
Tuscarawas	Gilmore	December 13–14	195	31 25
	Mineral City	January 1–2	175	31 25
	Fiat	January 20–21	250	14 50
	Sugar creek	February 10–11	310	31 25
Union	York	December 13–14	194	27 00
	Marysville	December 16–17	300	31 25
	Richwood	January 1–2	250	31 25
	Milford Center	February 12–13	150	20 10
Van Wert	Venedocia	December 9–10	350	27 41
	Convoy	January 1–2	325	30 95
	Van Wert	February 14–15	550	31 25
Vinton	New Plymouth	December 6–7	300	31 25
	Wilkesville	December 16–17	250	13 11
Warren	Morrow	December 9–10	400	31 25
	Mason	January 10–11	425	31 25
	Waynesville	January 24–25	550	31 25
	Lebanon	January 27–28	400	31 25
Washington	Lower Salem	December 13–14	300	30 50
	Bartlett	December 20–21	200	31 25
	Lowell	February 3–4	300	31 18
	Watertown	February 10–11	250	31 25
Wayne	Shreve	December 16–17	400	31 25
	Wooster	January 3–4	300	31 25
	Creston	January 22–23	220	31 25
	Orrville	February 5–6	500	31 25
Williams	Montpelier	December 6–7	250	31 25
	Bryan	January 10–11	480	31 25
	West Unity	February 21–22	350	30 45
Wood	Prairie Depot	December 9–10	266	31 25
	Tontogany	January 3–4	250	31 25
	Bloomdale	January 24–25	450	31 25
	Perrysburg	February 26–27	450	31 00
Wyandot	Nevada	December 11–12	400	31 25
	Sycamore	December 20–21	500	30 25
	Upper Sandusky	February 5–6	300	31 25
Totals			95,965	$9,499 01

INDEPENDENT INSTITUTES.

Counties.	Institutes Held.		Average Attendance Reported Each Session.	Local Expenses as Reported by Societies.
	Where.	When.		
Allen	Beaverdam	February 4–5	200	$57 73
Clark	Pitchin	February 20–21	225	24 00
Clermont	Amelia	February 14–15	250	66 32
Fairfield	Pleasantvile	January 17–18	350	75 71
Hancock	Rawson	February 12–13	450	58 45
Huron	Olena	January 21	......	....
Knox	Fredericktown	February 21–22	300	60 00
Licking	Kirkersville	February 6	400	....
Logan	Belle Center	February 14–15	......	85 80
Lorain	Brownhelm	January 22	275	27 50
Medina	Sharon Center	January 16–17	200	49 82
	Litchfield	January 6–7	300	54 60
Montgomery	Brookville	January 16–17	400	105 27
Morrow	Chesterville	February 7–8	290	82 16
Preble	Eldorado	February 5–6	400	70 00
Summit	Cuyahoga Falls	February 20–21	500	415 20
Wood	Grand Rapids	February 7–8	425	65 00
Totals	....	....	4,965	$1,297 56

PAPERS READ AT

FARMERS' INSTITUTES, 1907-1908

"HIGHER EDUCATION FOR THE FARMER'S WIFE."

BY MRS. F. M. JONES.

Since many of our colleges and universities have opened their doors to women, we hear and read a great deal about higher education of women. It is true many women have distinguished themselves in the professional field and on the lecture platform, but the truth remains, that woman's true sphere is at the domestic hearth. Home is her kingdom, where her reign is supreme. In just such a degree as the home, the wives and the mothers of a nation are virtuous, intelligent, loyal and God-fearing, in just so far is the national life pure. Since the farm is the nursery of the nation, and the wife the guardian of that nursery, it is the farmer's wife who realizes that the nation is dependent on her for its heroes, philosophers and martyrs, and appeals to the agricultural world for a higher education. When men learn that it requires as much education to administer the affairs of a house as any other profession, a great gain will be made in justice toward women.

The greatest difficulty the farmer's wife has to overcome is to convince the husband that she is his equal partner, having invested the same capital, her energy, life and health, with him, and expects an equal return. This accomplished, she has solved the most difficult problem in the curriculum of domestic agriculture. The farmer's wife believes, to a certain degree, in the emancipation of women; not to the extent of woman suffrage. She does not care to step down from her place of honor to meet with man at the ballot box, but she does demand an equal right to all the improvements and advantages of the farm home. It is often said that labor saving devices have not reached the kitchen, and true it may be, for in many farm kitchens the work is done after the manner of the grandmother. When the husband brings home the many farm improvements, such as the gang-plow, the binder and the corn harvester, he promises his wife that oil stove just as soon as he can afford it. The wife appreciates his promises, enjoys his advantages, but sees the selfish side of the investment.

As meekness is woman's virtue, she says nothing, but thinks a great deal. She begins to realize that when meekness becomes a weakness it ceases to be a virtue. She is awakened to the fact that women are partially to blame for this state of affairs and looks about for a remedy. Perhaps her husband would gladly supply her with all the modern advantages of the kitchen, if she would kindly demand them. This she must do before she can reach the higher plane of usefulness which is demanded of her. Look into the kitchen of the higher educated woman. It is located in the most convenient part of the house, the floor is painted or covered with linoleum, the walls are papered with varnished tile paper or sanitas, the windows have plain white curtains. Centrally located is the kitchen cabinet, which contains all her cooking utensils from the measuring spoon to the steam cooker; all made of aluminum, which require no weary hours in scouring to keep bright. On the right of the cabinet is her gas or oil stove, with its automatic oven; to the left is the sink, where she has hot and cold water always ready. Within a step is the dumb waiter, which contains the daily rations. The refrigerator saves hundreds of steps up and down cellar for articles requiring cold storage. Here are the bread and cake mixers, which produce as good a quality of bread and cake with ten minutes' work as with one hour's work the old way. In the laundry, the washing machine and mangle are run by the water motor or gas engine, which also runs the cream separator. The cream is sent to the creamery, doing away with the heavy work of the dairy, and gives better results. The broom is assigned to the back door, for her house is cleaned with the new process vacuum cleaner. With this process and the use of the fireless stove, the husband gets his three warm meals every day during house-cleaning season.

With these conveniences and many more that could be mentioned, farm life will no longer be a drudgery, but a diversion, with great possibilities within reach for her development and advancement. Ruth Ashmore says: "It is not only to make our lives as good as possible, but as easy as possible. Easy in the right way; not by neglecting our duty, but by taking up our burden with a smile. God meant for everyone to work hard enough to get tired, but he also intended them to enjoy their labor, take some rest and have time to indulge in a few of the desires of their nature."

Many and varied are the opportunities offered for the development of the farmer's wife today. A Woman's National Progress League, to study economics and the betterment of the farm home, is being formed in different parts of the country. In many states there is a Woman's Section in connection with the Farmers' Institute, where women speakers discuss various topics of special interest to women. It is hoped that Ohio will soon fall in line. In another state there is established a Farmer's Wife Reading Course; the object being the improvement of the farm home. The woman's club, which is a reform organization, is vitally interested in the cause of education. But a club has its limitations. Too often the members are found present at each session of the club, but absent from the mid-week prayer meeting and the Sabbath evening church service. But of what benefit are all these organizations for the betterment of the farm home if the wife has not time to engage in them?

Provide her with the higher grade of implements for work in her kitchen and she will do more efficient work, and thus have more leisure for the study of sanitation, hygiene and economic betterment of the home. The cultivating of the true principles of right and justice and christian charity which she instils into the minds of her sons and daughters will have a deep and inspiring influence on the national life.

"THE BEST IS NOT TOO GOOD."

BY MRS. J. E. OREBAUGH.

In searching for a topic which might prove of interest to this audience, I have been able to think of nothing more likely to please than a consideration of what may make for vital improvement in the attractiveness of farm life and add to the real joy of living.

On the surface of the matter it may seem strange to raise such a question when the farm home is surrounded by all that makes life really worth living. Country life is the natural environment of man. It is the life that calls forth the deeper feelings of his nature. All the songs of home are of country homes. No one could wax poetical over a city flat or even a narrow strip of ground with a house on it in town. It is in the country alone that one has a real chance to live—where the sun shines on one from the time it peeps above the horizon in the morning until it sinks to rest in golden beauty at night; where the changing seasons but bring added beauties and delights.

Life is not busier here than elsewhere, but it is lived in the future. One is always looking ahead and planning for what is to come. No one but a chronic growler can spend much time grumbling about what is past. Nowhere else is there such an opportunity for becoming acquainted with one's own soul.

But with all these beauties and advantages, that there is a lack of something felt in country life is attested by the number of people who each year leave the farm, and by the many young people reared on the farm who, when their education is complete, seek homes and employment elsewhere. This is often with the entire approval of their parents, which argues that *they* have felt some lack they wish their children to avoid.

This change in environment is not always to be deplored, for we know that the farm has given to the business and professional world some of its best material, and that this is likely to continue to be the case. But, on the other hand, there is no business in which there is greater demand for intelligence and education than on the farm; and it seems a great pity to see talented young people leaving an opportunity for prosperity and independence for an inferior position merely for the sake of avoiding farm life.

Even if they succeed, it is very doubtful if anything can compensate for giving up the simple, natural life for the artificial, and though they may travel far and gain much worldly wisdom, yet in the language of the Quaker poet—

"He who wanders widest, lifts
No more of beauty's jealous vail
Than he who from his doorway sees
The miracle of flowers and trees."

We, however, live in a world of progress. The law of life is growth. The procession of life is moving on and we must keep step. So however we may be blest by nature and environment, if we do not progress we will be left behind in the race. If we wish the young people of the country to love that life so that they will desire no better, we must make it attractive to them. With the natural advantages of country life, everything that brings comfort, refinement and culture to the home is easily accessible to us. It is quite possible for us to place our homes in these matters on a par with homes anywhere; and to make our rural communities known for their kindly hospitality and good fellowship.

The isolation and hard conditions of country life in the past caused people to become used to self-denial. It seemed almost a necessity of the environment. But these conditions no longer exist. We are not isolated if we but become acquainted. And, with modern conveniences, life is quite as easy here as anywhere. If we have not appropriated these conveniences let us have them. We should have the best in all matters.

It is not luxury and extravagance that add to the comfort and attractiveness of home, but simple elegance and convenience. And, to us who depend so much on our homes for enjoyment, these things are more necessary than to others. There are almost no household conveniences which are common in cities which may not be had with very little labor and expense in the country. Gas for cooking and lighting is now quite a simple affair, while other modern conveniences are quite practicable.

As for hard work, we all know there are a few strenuous times in the country woman's life, but they bring their compensations in the satisfaction over duties well performed and the pride in conscious skill. It takes a very considerable degree of mental ability to manage successfully some of the problems that come into the country woman's life, which prove her capable of using this ability in other directions should she choose to do so. And while these times come, yet, taking the year around, women on farms have more—I will not say leisure, for I suppose most of them occupy their time—but more control of their time than women in towns and cities.

Now the way in which this time is used depends largely upon the woman. Where there is but one woman in a household and the children are in school, she has ample time to be lonesome, if she is so inclined. But lonesomeness is really nothing more nor less than being tired of oneself. There are two cures. One is to be surrounded by others so that one becomes tired of them instead, or to cultivate self in such a way that the companionship is agreeable.

There is nowhere else such abundant time and opportunity for self-culture and the best kind of sociability as on the farm.

If this opportunity were improved, the standard of country life, in all that is really best, would soon be second to none in the world.

Culture, refinement and education are, like all other best things, within the reach of all. They are acquired simply by developing the best that is in us, and that may not ever be done without striving to know the best in those about us.

Education has been said to be all that enters into our lives from the cradle to the grave, which enables us to be a blessing to those about us and to ourselves.

Now, while I firmly believe that the very highest type of life is within reach of the farm home, yet I feel quite sure that it has not generally been attained.

Something is needed to bring people closer together, more in sympathy with one another. We are possessed of a dual nature, the individual and the social; and, if one is developed to the exclusion of the other, the result is not satisfactory. If our surroundings are congenial and we are supplied with the means of comfort and self improvement and shut ourselves off from others, we become very selfish and selfishness is always detestable. While, on the other hand, if we pay little attention to self improvement and continually seek the society of others of like inclination, we are in danger of becoming narrow-minded gossips; of the two states it is hard to tell which is the worse. But, if we really wish an all around improvement we must combine individual culture with a desire for the welfare of those about us.

Now, while club life may be carried beyond reason, I feel sure that clubs for mutual improvement and social enjoyment would greatly benefit our country communities. Many may feel the lack of educational advantages, and others that they would like to keep up studies they have pursued and keep abreast of the times—and perhaps above all, that they would enjoy the sociability of a club.

Chautauqua furnishes a variety of reading courses on various subjects, some one of which would surely meet the needs and tastes of such a club, and a discussion of current events and matters of interest, such as home decoration, household economy in labor and anything which might meet the special need.

Clubs have done much for women in inciting members to beneficial study;

in enabling them to overcome undue timidity; in furnishing social enjoyment; and above all, in bringing about a better understanding among their membership, and through this a broader sympathy with humanity everywhere. To sum it up, the influence is broadening, and I believe would be a blessing to any community.

The real enjoyment in family life depends so much upon the wife and mother that it is absolutely necessary for her to strive to know what would raise the standard of that life, and in order to know things and get new ideas, it is of vital importance that she come in contact with people.

Clubs might be managed in various ways, meeting in the evening where both women and men could be present, or better perhaps, afternoon clubs for women, with occasional open meetings for men. I am sure, however, that a good influence would be felt.

With homes as attractive and convenient as anywhere, with constant educational progress, and surrounded by the best of social influences, the young people would cease to look forward to the time when they could leave the farm. The word neighbor would become synonymous with friend, and not simply refer to the man who owns part of the line fence, or with whom you have occasional conversations about hogs in the corn or exchanginng labor.

There would be fewer persons anxious to exchange the freedom and independence of broad acres for life on a forty-foot lot in town, with arguments of the chicken question over the back fence.

Even the laudable excuse of advantages for the children sometimes proves as nothing to the anxiety felt as to their whereabouts in town.

There is a kind of discontent that is reprehensible and a kind that is advantageous. It is dreadful to be discontented with one's position in life, with business, home, friends and surroundings. But it is a very good thing to be discontented enough with oneself and achievements to continually strive for improvement and better results. It is this that brings progress.

We live in a world of progress. There are everywhere restless, progressive spirits who are moving humanity forward, whether it will or no. We are only doing our part in the world when we add our mite of influence to the betterment of conditions about us.

This community is progressing wonderfully. It has superior advantages in education which are bound to make themselves felt more and more. The standard of culture will be raised both in town and country. The time was when the town had a decided advantage, but it has passed. With telephones, mail delivery and many improvements we are all near together, while we have the advantage of being better able to command our time, of that solitude which is absoluetly necessary to spiritual growth. Then there is no place where the very best may be developed as in "God's Out of Doors." There is no place so suitable for all around education.

If one lives in city or in town he must get away from there sometimes; he must have a change. But in the country the changing seasons bring us all that is really needed of work and rest, of seed time and harvest, of the beauty of nature in all her changes, and if there is an advantage in change and travel to us, it is that it makes us really feel how much better is our own country home than any other place.

If the work is sometimes hard, it is far less wearing than the confinement of employment in cities and towns. Farm work brings vigor, health and independence. It is the unenlightened heart that loves idleness and considers it a mark of aristocracy; it is in reality a mark of inferiority .

While there are easier ways perhaps of securing a living than by farming, there is no way more free from graft and more thoroughly honorable.

The farmer wants in every business transaction just what is coming to him. Now the best life has to give is really his due. And the very best is what he should strive to secure.

Leaving all the counterfeits to others, and striving in all things to find out what the best is, let us demand, especially of ourselves, the very best.

"THE AGRICULTURAL FAIR."

BY MISS CELIA HAMMOND.

First of all, what is an agricultural fair? An agricultural fair is a gathering together from the different parts of a state or county the best of all the products of a farm; also a fair sample of the output of the factories of the country. Second: What is the purpose of an agricultural fair? An agricultural fair is held annually for the purpose of aiding the farmer to find the best way to improve his farm and the grade of crops and stock produced on it.

Our schools of today are many times in advance of the schools of even twenty years ago. Why? Because of the greater variety of trades and professions, and the demand for men and women thoroughly prepared to meet the growing needs. Few men of today fail to see the benefit to be derived from a good education, and give their boys and girls the best advantages that lie in their power. As the demand for trained men in the trades and professions advances, so too it becomes necessary for the farmer to become educated in his line. The farmer's school, however, cannot often be the college class-room, but just the same there are schools for the farmer. He cannot spare the time from the farm to go to school, but he can purchase the best farm literature, attend the institute and the agricultural fair, and through them learn many things which will not only save money, but make it. Right here let me speak a word for the farmer boys. The O. S. U. has prepared a special course for farmers, especially the boys. It begins in January and continues ten weeks; just the time of year when the boy can be spared the easiest. Now, farmers who have boys who expect to make farming their means of livelihood, think this over between now and the time school opens, and send your boys for a few weeks of training. A boy who can judge a good grade of stock is worth far more than one who cannot. A boy who can tell what amount of fertilizer to use with a certain kind of soil and what crop will grow on it to the best advantage is worth more than the one who guesses at it or follows an old method "just because father did."

At an agricultural fair are found the best breeds of horses, cattle, sheep, hogs and poultry. A farmer who makes a specialty of any of these will find it time well spent to make a study of the stock exhibited at the fair, and compare it with his own, thus discovering along what lines he can improve. The government has experiment stations which should prove a benefit to the farmer. They place exhibits at the large agricultural fairs, and the farmers would find that they could save as well as make money, if they would examine the exhibits which relate to the feeding of stock, raising of grain and the care of fruit. At the exhibit can be seen the amount of feed which is necessary to feed the different grades of stock, to make them fill their places to the best, and the statistics of the experiment station proving all their statements can also be seen. There are exhibits of grain raised by various methods, showing conclusively which is the best with certain kinds of soil. Then, too, the farmer who raises fruit should be interested in the display of diseased trees and the notes on the cause and cure of such diseases. These exhibits alone should pay a farmer for the time and money spent to attend the fair. How much better to learn at the fair from government experimenters than to stay at home and jog along in the same old rut year after year. Many men seem to prefer to try for themselves, forgetting that "experience is a dear school." Years ago the cradle, hand-rake and sickle were the machinery used in the harvest field. The first binders in many sections were burned by enraged farmers. But the binder came to stay, and in its train hundreds of labor-saving devices. At the large agricultural fair these are to be found in abundance, and in fact every late improvement for saving the farmer many a step and an aching back. The farmer should see all these, and while he and his sons examine the machinery, let the good wife and her daughters see the new exhibits for making her work lighter and the home brighter. When a farmer provides himself with everything he fancies will aid him, let him inspect the devices for making life easier for his wife, and when he buys a new machine to use on the farm, add something to the household machinery. The man who wishes to succeed in farming and never goes away from home to see how others do, but continues to follow in the footsteps of his forefathers, will find that he will fall far short of success. Men are just beginning to learn that dairy stock does not produce market stock, and that the hen that makes the most rapid and greatest growh is seldom the best layer. Everything has its especial purpose, as has often been said.

These should be proofs enough to a thinking farmer that it would pay him to spend at least one day at the fair, and if he goes with the purpose of learning, he will surely do so.

"HOME."

MAUD JENNINGS.

It has been said that the sweetest words in our language are "mother, home and heaven," and one might say that the word home includes them all, for who can think of home without remembering mother, and after all, is not home the dearest name for heaven?

All that is lovely and worthy in our lives centers about the little word home. T. DeWitt Talmage has beautifully said, "If you wanted to gather up all tender memories, all lights and shadows of the heart, all banquetings and reunions, all filial, fraternal, paternal, conjugal affections, and had only just four letters with which to spell out that heighth and depth, length and breadth and eternity of meaning, you would write it all out with these four capital letters: H-O-M-E." Home in our language means the place where one lives and loves and strives to attain all that is good and desirable, the spot that the soldier fights best to defend, that the workman toils hardest to maintain and to which he turns at night with the feeling that this one spot, with the loved ones sheltered by its roof, is worth all the toil and weariness that must be borne in the heat of the day. Home has a broader meaning than a mere dwelling place. Years hence we may return to the spot once called home, and the dwelling place may remain unchanged, but it is not home if those who were near and dear to us in days gone by are all gone.

"Home is not merely four square walls,
Though with pictures hung and gilded;
Home is where affection calls,
Filled with shrines the heart hath builded.

"Home! go watch the faithful dove,
Sailing 'neath the heaven above us;
Home is where there's one to love,
Home is where there's one to love us!

"Home's not merely roof and room,
It needs something to endear it;
Home is where the heart can bloom,
Where there's some kind lip to cheer it.

"What is home with none to meet,
None to welcome, none to greet us?
Home is sweet, and only sweet
When there's one we love to meet us."

There is music in the word home. To the old it brings a bewitching strain from the harp of memory; to the young it is a reminder of all that is near and dear. Let me say to parents: Make the home life beautiful without and within, and you will sow the seeds of gentleness, true kindness, honesty and fidelity in the hearts of your children, from which they will reap a harvest of happiness and virtue. The memory of a beautiful and happy home in childhood is the richest legacy any man can leave to his children. The heart will never forget its hallowed influence. Such a home is a constant inspiration for good and as constant a restraint from evil. If, then, the spell of home is so powerful, how important it is to make it pleasant and lovable. Many a time a cheerful home and smiling face does more to make good men and women than all the learning and eloquence that can be used. It has been said that home is the sacred refuge of our life. The importance of sacredly guarding the family relation cannot well be over-estimated. It is the foundation stone of all that is good and pure.

The unity and perpetuity of the family tie in purity and peace is the only safeguard to national perpetuity, peace and honor. Demoralize the family and you destroy both domestic and national happiness and undermine the temple of virtue and hope, and prepare the way for moral and civil desolation. The family circle ought to be the most charming and delightful place on earth, the center of the purest affections and most desirable associations, as well as the most attractive beauties to be found on this side of Paradise. To Adam, Paradise was home. To the good among his descendants, home is Paradise. From the well-ordered homes in this broad land of religious and civil liberty, not only are great and good statesmen to come and pious, intelligent wives, but what is as important, from these homes must come the common populace of the land, upon whose intelligence, patriotism and purity depends the continuance of the rich blessings which are now common to all. Mothers and daughters, wives and sisters, remember that we have the making of the future of this great country, and let us rise at once to our high and holy duty.

Six things are requisite in an ideal home. Integrity must be the architect, tidiness the upholsterer. It must be warmed by affection and lighted up with cheerfulness; industry must be the ventilator, renewing the atmosphere and bringing in fresh salubrity day by day; while over all, as a protecting canopy and glory, the blessings of God. As it was my fortune or misfortune, whichever it may be called, to be a farmer's daughter, it is the farmer's home that most interests me. Some people may laugh when I speak of the ideal farmer's home, and say we have enough to do to take care of the real, without bothering our heads about the ideal. But, friends, please bear in mind that the idea of today may become the real of tomorrow. Phillips Brooks once said: "Nothing can really haunt us except what we have the beginning of, the native capacity for, however kindred in ourselves. We feel the thing we ought to be beating beneath the thing we are." And how true is this statement. Who can know for a certainty just what the possibilities of this life are? Doubtless there are many today just entering life's field of action. The future looks bright to them. They have mapped out in their minds an ideal life and are working zealously to that end, yet ere they reach the point of their ambition they may be reaching out for something better, or the people of that era will pass on and leave them. This is a world of progression. We cannot stand still. We must either move forward or backward.

Who of you can point me to a class of people whose advancement has been more marked in the last twenty years, or even the last ten years, than the farmer? What would have been the result if the well-to-do farmer had said: "My home and surroundings are good enough; let well enough alone." The idea that farmers might be educated and cultured people, people worthy to mingle in the best of society, was at one time unheard of, yet today it is almost, if not quite, universal. In this day and age farmers do not need to take a back seat. In the farmer's home you may not find so much of the glitter and gloss of this world, but you will find what is far better, the substantial elements of life.

What is gloss after all? It soon wears off. It is the pure metal that is most prized. From the farmer's homes go forth much of the bone and sinew of society. Many of our worthy presidents and eminent statesmen have gone forth from the humble farmer's home. Yes, read in history's pages and see if the homes they come from were not ideal in many respects. We read of the noble sacrifices of the fathers and mothers to bring them up right, to clothe, educate and provide the best possible comforts for them. Doubtless their ideal for their children was just as high and noble as could be, although many of them never realized any of the glory achieved. It was not mere luck that ever brought them true success, but it was labor, with an earnest purpose toward an ideal. We cannot grasp the ideal until we have first used the real to the best of our ability. The latter prepares the way for the former. It is a mistaken idea that farmers cannot have an ideal and reach it just as well as the business man. When you enter the farmer's home today and think of it in comparison with the farmer's home of the past, you will say that is surely an accomplished ideal. Today we see in the farmer's home an unsatisfied condition; that means great things for the generations that live to see the fulfillment of the present ideals.

The farmers and their wives who are not already too old to change their ways and grasp new ideas, are borne forward with this age in a way pleasant to see. Scientific farming and dairying are taking the place of methods used by our forefathers. Farmers' sons and daughters are taught to work and be self-supporting; are educated in the direction of their choice of vocation in life; are accomplished; and last, but not least, are proud of their parentage. The farmers are the wealth producers of the land, and they realize full well where the money comes from. In times of financial disaster, who, besides the monopolist, are the rich people? Are they not the farmers? They have enough to eat and a sufficient supply of clothing and a home over their heads, and why are they not rich? To whom do the city people who are out of employment, clothing and provisions come for aid? Why, to the hayseed farmer, to be sure. In times of prosperity, they would turn up their noses and pass by on the other side. They seem sometimes to think it is a disgrace to till the soil. But are we not commanded in the Good Book to earn our bread by the sweat of our brow?

My ideal of a home would not be one where work was not, for in such a home happiness could not exist. People may sneer and laugh at the farmers and farmers' homes, but I believe that the ideal farmers' home is the happiest one on earth. It is there you find the old time hospitality, so little practiced now in many so-called first families of the land. What is more pleasant than to visit a home where the latch string is hanging out, and you feel an air of genial welcome every time chance may bring you there? At one time people would have said: "Farmers are so ignorant and uninformed as to the ways of society that they do not dare mingle in society." Not so in this day and age. Farmers do know. They are educated, cultured and refined people. But they do not like the stiff, formal ways of the fashionable world. They enjoy the informalities best. People can be polite, courteous and kind, and yet not be stiff or formal. The present era of time marks the dawn of a revolution in the farmer's home. Once you would hear complaints about the boys and girls leaving the farm and going into the world at an early age because home life was so dull. Today farmers' sons and daughters are beginning to think of home as the pleasantest spot on earth, and it is with sadness that they leave the farm, although their vocation in life calls them elsewhere. There is music, pictures, books and papers, flowers and plenty of heat and light to help make home pleasant and attractive to its inmates. There is also a certain attraction for mother's table that follows them through life. When far from home and obliged to get board at restaurant or hotel, they will murmur to themselves: "This is not much like mother cooked when I was at home on the farm."

Let us, as farmers, one and all strive to grasp every opportunity that the present affords to improve ourselves mentally, morally, physically and spiritually, and at all times press forward toward our ideal, that all who come in contact with us in our homes or elsewhere may be made better, nobler men and women for having known us. Let us endeavor to make our homes beacon lights to the heavenly home, where all is light and joy and peace. The sweetest title ever given to heaven for which we long is the "home over there."

"Make home a hive where all beautiful feelings
Cluster like bees and their honey dew being,
Make it a temple of holy revealings,
And love its bright angel with shadowy wings.

"Then shall it be, when afar on life's billows,
Wherever your tempest tossed children are flung;
They will long for the shades of the home weeping willow,
And sing the sweet songs which their mother had sung.

"Make your home beautiful, gather the roses
That hoard up the sunshine with exquisite art;
Perchance they may pour, as your great darkness closes,
That soft, summer sunshine down into your heart.

"If you can do so, Oh! make it an Eden
Of beauty and gladness, remember 'tis wise;
'Twill teach you to long for that home you are needing,
That heaven of beauty beyond the blue skies."

"MANAGEMENT OF THE DAIRY HERD."

BY J. M. HODSON.

[Read at the Farmers' Institute held at Montpelier December 6 and 7, 1907.]

In the care and management of the dairy herd we should begin with the calf, for upon our success in developing the calf to its highest efficiency as a dairy cow depends largely our success or failure with the dairy.

No matter how carefully we manage or how successfully we feed or how well-bred our herd, we are doomed to at least partial failure if we fail to properly rear and develop this calf. In the followinng I shall outline very closely my own methods, which I fully realize are not perfect, but which have proved the best adapted to my own conditions.

Now in raising this calf, we are endeavoring to put together a machine that will convert our raw material (namely, feed) into milk, which we in turn convert into our various uses.

Now what we want is the machine that will convert the largest amount of raw material into milk solids at the lowest cost. By milk solids, I mean milk minus the water. Now the cow, or machine if you please, which will produce these milk solids at the lowest cost is the most profitable animal to keep, and is the one we are going to try to raise. To do this we must use feeds rich in protein. The protein is that part of the feed which goes to form the bones, muscles, hair, hide, etc., thus producing as much growth and developing the digestive organs as much as possible, without encouraging a tendency to lay on fat. To do this I only allow the calf to have whole milk until about six to ten days old. Then, if the calf is strong and healthy, I begin gradually reducing the amount of whole milk and adding in its place warm, sweet skim milk, and in about a week, or at least two weeks, I expect to have it on skim milk entirely. Be very careful at this time not to overfeed, as overfeeding is almost certain to produce scours, which is to be especially guarded against at this time.

I use but very little oil meal on this account, as its effects are too loosening on the calf. Don't be in too big a hurry to feed grain, but begin as soon as they will eat it, to give a little bright clover hay. Keep this before them at all times, and keep them in warm, dry quarters, with plenty of light and fresh air.

When about seven or eight weeks old, begin to feed a little bran, with about one-fourth part of shelled or ground corn. If a fall calf, do not turn out in the spring until the ground is warm and the grass has become good.

If a spring calf, do not turn out at all the first summer. When the flies become bad, stable in a darkened, cool stable in the day time and turn out at night.

Aim at all times to keep the calf as comfortable as possible. Feed skim milk until at least eight months old and, if possible, until one year old.

I prefer to have my heifers freshen at about two years old, and in August or the first of September if possible. If a spring calf, let her go until thirty months old, but have her freshen at about this time, for the reason that she can then milk twelve to thirteen months and then freshen in October or November the next year. This gives her a long milking period the first year, thus developing persistence in milk-giving, as a cow's habits of after life are largely formed the first year she is milked. Now as to the management of your cows. As the time for your heifers and cows to freshen approaches, watch them closely and see that they are kept comfortable and healthy. See that their bowels do not become costive; if inclined to become so, feed a little oil meal, or if a physic is needed, give about one quart of raw linseed oil. If a severe physic is needed, use the following (and every dairyman or owner of a cow should know this, as in nine out of ten cases of sickness, the first thing to do is to give a physic): 1 to 2 pounds of epsom salts, according to age, condition and size of the animal (usually 1 pound is sufficient); to this add about 4 ounces ground ginger, put into a drenching bottle and add water—as hot as should be swallowed—enough to dissolve the mixture, and give as a drench after the cow has calved. My rule is never to allow the calf to nurse, but as soon as dry, remove it from the sight of the cow. By doing this it will be much easier to teach the calf to drink, and the cow will forget it sooner; and if a heifer she will never know but that milking is the natural way. From the first to the third calf milk the cow clean at once, but after that I only remove milk to relieve the udder—for the first two milkings—as this is a partial preventative of parturient apoplexy or milk fever, as it is commonly called. Before the fourth calf there is scarcely any danger of this disease. I feed grain very lightly at first, then gradually increase until I have them on full feed in about twenty or thirty days. A cow should not come to her full flow of milk until from fifteen to thirty days after freshening. Now as to my reason for having fall cows:

First, the winter is when we have the most time to milk and care for her.

Second, she will give her largest flow during the winter, and when going on grass in the spring, will give nearly as much milk as though just fresh. I am satisfied a fall cow will give at least one-half more during the year than one fresh in the spring.

Third, the fall cow gives her largest flow of milk when the price is highest. We milk our cows in the stable the year around, and begin stabling them nights as soon as the nights become cold, but continue to turn out in the day time—except in inclement weather—until winter sets in. Toward Christmas we begin constant stabling, only turning out on exceptionally fine, warm days, probably not oftener than six or eight times in the next twelve weeks. To do this it necessitates good stabling and careful attention. Our stable is 56 feet long and has 17 stalls. These are equipped with loose stanchions, hung with chains, giving the cow a great deal of freedom. The stable is sealed tight throughout. It is equipped with the King system of ventilation, which keeps the air pure at all times. Have plenty of windows facing the cows, so that it is almost as light as out of doors. We whitewash the stable once or twice each year, which adds greatly to its cleanliness and purity. It also improves the looks and adds to the light of the room. This stable has a cement floor, which we much prefer to wood, as it is easier kept clean and is also much purer and saves all the manure. The bottom of the manger is of cement in the shape of a trough about five inches deep, which slopes about one and one-half inches in the length of the stable. There is a pipe at one end, from which we let in water for the cows twice per day from a tank that is warmed from a heater, so that it is never very cold. It has never frozen in this barn in the two years it has been in use. We have a litter and feed carrier, and one man can clean the 17 stalls in from twenty to twenty-five minutes, and can feed both ensilage and grain in fifteen to twenty minutes, including time of getting out the ensilage.

I begin feeding ensilage as soon as the pastures begin to get brown and dry. Feed but little grain until the grass begins to get short or the milk flow begins to lessen. I then begin feeding lightly on grain, gradually increasing until I have them on full feed. Our feed consists of from six to fourteen pounds per day of the following: 2 pounds corn and cob meal, with 1 pound continental gluten feed (this winter I cannot obtain the continental gluten feed, so will use Buffalo gluten feed); to this add a little salt and mix thoroughly. I feed of ensilage from 15 to 45 pounds per day per cow. Ensilage is fed the first thing in the morning, putting the grain on top of it. After milking and watering we give a small feed of clover hay. This rule is followed again in the evening, as we only feed twice per day at regular hours. I consider regularity very important both in feeding and in milking. In the spring, after turning out on grass, I drop off on grain and feed only a small quantity during the fore part of the season, mostly ground corn-cob meal. Toward the first of August, when the flies begin to bother, we begin to stable again during the day; I darken all the windows, open the ventilators and hay chutes, which gives good circulation of air. Here the cows are comfortable all day, as the flies do not bother them and it is cooler than outdoors in the sun. During this time I give a good feed of clover hay to eat through the day. After oats cutting, I begin feeding sheaf oats instead of hay and grain. Some may think this too much work, but we find it no more than turning out, as we can clean the stables quicker than to go one-half mile and bring the cows up. By this method I have no trouble with cows shrinking in their milk on account of heat and flies, the latter the worst curse the dairyman has to contend with.

Now a word more before passing to the business end of the proposition. In handling the herd, go about them quietly. Allow no unnecessary noise or disturbance among them. Keep the dog on some other part of the farm. In breaking the heifer to milk, begin handling her long before she freshens. Do not allow her to step around, but persist until she stands as you want her to. She will soon give up, and after that there will be no more trouble with her.

As to the business end of the proposition; and here is where too many dairymen fail. Many a man will take good care of his cows, feed them well, but when you ask him how much he gets from them in a year he doesn't know, or guesses about so much, which is equivalent to I don't know. He will say in going through the herd, that this or that cow is his best, when if he were to keep an account of each cow's milk and test it each month of the year, he would be surprised to find these were not his best, but some cow he had imagined was no good. Most men will say they haven't time to keep an account of each cow, but after trying it they will be surprised to find what little time it really takes. My plan is as follows: Each animal in the herd has a herd number which I have a record of, together with name, age, color, markings, sire and dam. Behind the cows, and where we strain the milk into the cans, there hangs a spring-balance scale, with a loose hand that can be adjusted to balance the weight of the pail; this hand shows the weight of the milk. It only takes a few seconds to hang the pail on the scale. Before emptying it, take the weight of the milk off the scale and note same. Beside the scale, tacked against the wall, is a sheet of paper and pencil. This is ruled, with a space for each cow for one month. (There are dairy herd sheets prepared especially for this purpose, to which you have only to add the number of the cow.) Two days of each month a sample is taken of four milkings from each cow's milk, and this composite sample is tested, which gives a very good average for the month.

These weights are all added together and a record kept of the amount of milk, test and amount of fat for each month of each cow. Thus, at the end of the year, I have a complete record of what each cow has done. I then know which cows are paying and just how much profit or loss they have produced. It is also of great value to show to buyers, in case you have anything to sell. Now the question I know the most of you are ready to ask is: "Does all this trouble pay?" In answer to this, I will give a few figures from last year of our own herd, and I wish to impress on you particularly that these are *facts* and not mere guesses. From April 1, 1906, to April 1, 1907, there was an average of 13 cows in the herd, 8 of which were mature cows and 5 heifers milking with first or second calves. The returns were as follows:

13,490 pounds cream, sold to creamery	$1,053.62
Milk sold at fairs while on exhibition	24.00
2,100 pounds milk used in family, at $1.40 per cwt	29.40
65,157 pounds skim milk, at 25c per cwt	162.89
Total receipts from the 13 cows	$1,269.91

Expenses for hauling cream, putting up ice, gasoline for engine for separating the milk	$ 29.75
Feed for cows, including grain, ensilage, hay and pasture	520.00
Total	$549.75

Profits $720.16; average gross receipts per cow $97.68; average expense of feed per cow $40.00; average expense for marketing $2.29; net profit per cow $55.39. The total amount of milk given by the herd was 80,147 pounds, an average of 6,165 pounds, with an average test of 5.3 per cent. fat, which would make the herd average 381 pounds butter each for the entire year. The eight mature cows averaged between June 1, 1906, and June 1, 1907, 7,096 pounds of milk, equivalent to 462 pounds butter. Now in conclusion, if you are going to run a dairy, don't undertake to do it with beef bred or common cows. Select cows of one of the dairy breeds, whichever you most fancy—for that is the one you will take the best care of—and stick to that breed. Don't go to crossing them, with the idea that you can improve on both, as you are certain to fail. While you may occasionally get an extra individual, you will get nine failures, and the tenth will be of little satisfaction, for the simple reason that she will be of no particuar type and you cannot depend on her breeding. Her calves may be either good or bad and you cannot depend upon them. The man who undertakes to dairy with common cows is doomed to almost certain failure, let him take as good care of such a herd as possible and feed the very best he knows how. They will only respond to a certain point, and that will be enough to about pay for their feed, with scarcely anything left for his work. With this kind of cows he cannot but become discouraged and will fall back into the old rut. No amount of persuasion will induce him to try again. On the other hand, let him get together a herd of good cows of a good dairy breed that have been bred in one line, for one particular purpose for generations. When he gives *them* good treatment they will respond at once. He sees them doing well, takes a pride in the fact and he is encouraged to do better. He dislikes to see them drop off in their milk, and when they do, he begins to look for the cause and will try to remove it; and when he knows, as *I now do*, that for every dollar invested in feed he will have two returned in milk, there is thus a financial satisfaction, as well as that of having a good herd to handle, care for and look after.

"CENTRALIZED SCHOOLS."

BY A. N. CARMINE.

[Read at the Farmers' Institute held at Marion, January 31, 1908.]

In 1821 the first law providing for free schools in Ohio was enacted by the general assembly. A scattered population and comparatively little wealth prevented the establishment of many public schools during the next ten or fifteen years. At the expiration of the next forty years the country contained many cities, known for being little more than trade centers for a large rural population. During the forty-three years since the Civil War, a radical change has taken place, which resulted in factories being filled by men from the country and small villages. Owners of farms have often sought for themselves and children better social conditions and higher educational advantages in villages of a few thousand inhabitants. This invariably leaves the farm to be occupied by renters, who have few or no children and who change their residence often enough to have a bad effect upon the rural school.

Notwithstanding the fact that the wealth of the rural districts has been gradually increasing, its population has decreased from 85 per cent. to 65 per cent. Because of the wonderful progress in the manufacturing of farm machinery, the extension of the telephone and rural mail systems, *business* is transacted more rapidly and the social and religious conditions of the community have been lessened. The inducements put forth by the factory, the steadily decreasing fertility of the soil, the apparent necessity for wisdom in the methods of farming, and the fact that man is becoming more and more a gregarious animal, has caused an annual decrease of about 5,000 children in our township districts throughout the state, leaving an average enrollment of from 5 to 15, where once were found from 50 to 75.

Upon examination we find over 750 subdistricts in our state where the attendance is rarely more than 10 pupils. The condition thus manifested puts the subdistrict beyond all hopes of becoming any better. The fact that the wages for the rural school teacher are not equal in purchasing power to what they have been for 25 years, the age limit for the granting of certificates, the short time positions may be retained and many other equally important reasons have had a tendency to lessen the number seeking positions in the rural school. A *few* rural schools in our county were unable to open last September at the regular time.

The one great question that is agitating the mind of the conscientious farmer is how to give his and his neighbor's children educational advantages equal to the village and city children.

There is but one answer to this question, and that is through the process of township centralization; a movement which is slowly, but surely establishing itself throughout our state.

The law at present relating to centralized schools and suspending of subdistricts was passed April 25, 1904, and is as follows: Centralization by suspension of *one* or *more* subdistrict schools. (Sec. 3, 922, Ohio school laws.)

The board of education of any township school district is authorized to suspend the schools in any or all subdistricts in the township district, but upon such suspension the board must provide for the conveyance of pupils residing in such subdistrict or subdistricts to a public school in said township district or to a public school in another district, the cost of such conveyance to be paid out of the funds of the township school district: or the board may abolish *all* the subdistricts, providing conveyance is furinshed to *one* or *more* central schools, the expense of such conveyance to be paid out of the funds of the district. When transportation of pupils is provided for, the conveyance must pass within at least the distance of *one-half* mile from the respective residences of all pupils, except when such residences are situated *more* than one-half mile from the public road; but boards of education *shall not* be required to provide transportation for pupils living *less* than one-half mile from school house.

Submission of question to vote (Sec. 3,927-2, Ohio School Laws.)

A township board of education *may* submit the question of centralization and upon the petition of not *less* than one-fourth of the qualified voters of such township district, *must* submit such question to vote of qualified electors of such township district, and if more votes are cast in *favor* of centralization than *against* it at such election, it shall then become the duty of the board of education, and such board of education is required to proceed at once to the centralization of (*the*) schools of the township and, if necessary, purchase a *site* or *sites* and erect a suitable building or buildings thereon; provided, that if, at the said election, more votes are cast *against* the proposition for centralization than *for* it, the question shall *not* again be submitted to the electors of said township district for a period of two years. When the schools of a township have been centralized, such centralization shall not be discontinued within *three* years thereafter, and *then* only by the petition and election as required herein, and if at such election, *more* votes are cast *against* centralization than *for* it, the division into subdistricts as they existed prior to the centralization, shall thereby be re-established at the next regular election and subdistricts' directors shall be elected, as provided in (Sec. 3,921*a*) of this act.

It will be observed that there are three ways by which schools may be centralized: I, By a vote of the people; II, by a vote of the board of education to suspend small schools and transport the children to some other subdistrict or nearby village school, and III, by forming special districts of territory whose residents desire to transport their children to school at public expense. There are within our state 158 centralized and consolidated schools, divided as follows: one or two schools transported to another subdistrict or to a nearby village school, 97; about one-half of schools suspended, 23; completely centralized or nearly so, 38; a total increase of 66 in one year.

DRIVER'S CONTRACT.

The question most often asked by those interested in centralization is, "Is it cheaper?" We can only say in answering this question: "That it is not how cheap, but how efficient." While a completely centralized system may cost a little more, the cost per pupil on the average daily attendance is not so great.

Routes are let to the lowest responsible bidders. The amount varies from 90 cents to $2.00 per day, according to the length of the route. The distances vary from three to six miles, and the number per conveyance from 6 to 27. Wagons cost from $80 to $175. The little subdistrict of 3 or 4 to 20 pupils, and the central or consolidated school of 100 or 200 or more may each pass by the *name* school. A $20 cow and a $50 cow may each pass by the *name* cow, but the *blue milk* and *thin cream* of the one and the *rich milk* and *thick cream* of the other, make a great difference in the cows. So it is with the centralized or consolidated schools, the *product* is the gauge of *efficiency*.

In the many townships where the plan of centralization has been adopted, no attention has been paid to the old subdistrict boundary lines in planning the routes. It appears that every effort has been made to have the children at the farthest points to reach the school in *one* hour and a *quarter*, when the roads are in fair condition. With the splendid system of gravel and stone roads with which Marion county is now provided, this can be easily done.

One important feature of the centralized schools, not found in the subdistrict school, is the excellent library, in which are found many books upon the subject of agriculture.

As a rule, the elementary branches are taught more thoroughly, because both teacher and pupil have more time to do the work. The old program of from 25 to 30 recitations a day has been shortened, so that a teacher can prepare herself for the work of the day and feel a sense of satisfaction over what she has accomplished. The high school course consists of those branches taught in villages and towns of from 500 to 1,500 inhabitants, and several have already introduced *agriculture* as a *science*, with necessary equipment for its work.

The following are some of the advantages in brief:

I. Better teachers will be secured. Instead of passing the teacher around, as heretofore, he is retained and the pupils are passed from grade to grade. Better supervision, because the superintendent is in direct touch with each grade and each teacher.

II. It makes possible a school equal to the graded school of the village or city, and still retains every valuable feature of country life.

III. The general health of the children is better. There are no wet feet and clothing. There are fewer colds and resulting diseases.

IV. The morals of the children are improved, because common offences to decency are held in check *far more* than under the old plan, where *fighting*, *profanity* and *vulgarity* on the road *to* and *from* school contributed to tear down what a good home attempted to build up.

V. It is the one great means for the introduction of *agriculture* and *nature* study in the country school.

VI. It *increases* the value of farm property for those who desire to *sell* and provides a broader education for those who remain in the country. Under this plan, whole families do not have to move to town to educate the children. Notwithstanding all these advantages, there are yet those who like to quote the old poem, "Forty Years Ago," and relate some of their vivid experiences associated with the little weather-beaten school house that did little more than *house* them, and furnished but few modern advantages for education.

"CO-OPERATION IN ROAD WORK."

BY ELMORE ROBINSON.

[Read at the Farmers' Institute held at Bath, Summit county, February 12 and and 13, 1908.]

The subject of roads has been discussed since the first government roads ere established (when these roads were nothing more than a trail blazed through the forest), from generation to generation until the present time; a subject of great interest to the citizens of our country.

There is no question that comes closer to the majority of the rural population than the matter of taking care of the earth roads.

It is true that in some parts of the state much has been done in the way of improvement, but in our county, for a part of the year at least, we find ourselves in the same old rut. We seem to be, in a way, blind to our own interests. We allow our selfishness to hinder the carrying out of the ideas and plans that we know to be right.

As Shakespere says: "If to do were as easy as to know what were good to do, chapels would have been churches and poor men's cottages princes' palaces. It's a good divine that follows his own teaching. I can easier teach twenty what were good to do than to be one of twenty to follow my own teaching." Ruskin has given a quotation like this: "The law of nature is that a certain quantity of work is necessary to produce a certain quantity of good of any kind whatever. If you want knowledge you must toil for it. If you want food you must toil for it. If you want pleasure you must toil for it." And we might add, "If you want a good road you must toil for it."

We have in our township about fifty-five miles of roads. These roads must be cared for and improved. It is a common-sense proposition that good roads are a good thing for any community. This being the case, the question arises with road officials, how is this good thing to be obtained?

Everyone will agree with me when I say that improvement in any line of work is only obtained by intelligent effort. Improved highways (for our township) can only be secured therefore by judicious use of money and labor and the hearty co-operation of the citizens of the township. Co-operation and intelligent effort are the only practical solution of the problem. (Co-operation means work together.) Our interests are mutual; why, then, should we not work together to secure this great improvement? Instead of asking, can we afford to build good roads, we might ask, can we afford to do without them? Farmers could save enough in marketing their products to pay for all expense of ordinary road improvement. We need them for our pleasure and convenience, as well as for profit. We need them for our schools and our free rural mail delivery. We want our trading places as near in the winter as in the summer. In Holland they measure distance by the pipes of tobacco they smoke while going. A place is so many pipes away. Reckoning in the same way, our market town is sometimes one pipe away, sometimes two and sometimes it is a whole package of tobacco away.

I shall not attempt to map out a plan for work, nor hope to do more than point out a few established principles, which may be helpful. *I* take off my hat to our new road law. And after one year's test, although not perfect, it has been pronounced by many conservative men, the best road law ever placed on the statutes of Ohio.

During the past year, under this new law, there has been more valuable work done than for any three previous years under the old law. To accomplish most in this, I insist that there must be co-operation and good efficient work done in all the departments; from commissioners, trustees and superintendents to each individual.

If we could secure as prompt performance of the duties imposed by our road laws from each individual that has two days' work or tax to be paid in labor, as a good farmer or a careful business man gives his private business, the roads of our township would be greatly improved without levying any more taxes than the average of the last ten years.

Much depends upon the superintendents, as they have full control of the two days paid in labor. It is not so easy to get value received out of this labor fund as it is out of the cash, and for this reason we should see that the right men fill the office of superintendent; men who know how to do road work and are not afraid to do it; men who will not receipt for a day's work until they know an honest day's work has been done. We would not refuse to do our part if we would stop and consider the value of our citizenship—the greatest treasure of any nation—where every man's rights are protected by law and where, in almost every city or town and through the counties of Ohio, are the finest charitable institutions and hospitals, where everyone is cared for in sickness, regardless of his religion, his wealth or social rank, and of our free schools, where every boy and girl can secure a high school education, and many more privileges I need not mention. These are all free. And the man not listed on the tax duplicate, they do not cost one penny. All the government of Ohio asks in return for all this is the two days' labor annually. Is not *this* a square deal? The man who refuses to make good his part ought not to be allowed his franchise.

One feature of the work done last year was the introduction of D. Ward King's plan of working roads. Where it was given a fair trial, it was very satisfactory. I believe that this plan is the key to economy in road work. Mr. King says that the idea is to keep the water off by frequent treatment, and frequency of treatment with one man and two horses and a five-dollar drag, whereas it is not possible with four men and six horses and a two hundred and fifty dollar machine. It is the cheapness and simplicity of the plan that recommends it to us.

It seems to me that this idea of Mr. King's is an exceedingly valuable one. We have an ideal soil and good natural drainage in our township for this kind of road work, and if the people would use and care for them I think it would be a good investment for the township to procure fifteen or twenty more of these drags. It would furnish an opportunity for co-operation not possible in any other system of road work. It has been proved beyond a question to be a successful way of caring for earth roads.

In conclusion, I would say that in my estimation, if the people become awakened to a conscientious discharge of the duties imposed upon them by our present road system, our taxes need not be burdensome to greatly improve our roads, but if each one tries to see how little he can do to discharge the obligation, you might increase the taxes to the full extent and the improvement would be very slight.

"THE FARMER OR A PROFESSION."

LAURENCE J. DOUCE.

[Read at the Farmers' Institute held at Caledonia, December 4, 1907.]

In the first place, perhaps I had better tell you why I have written a paper on this subject. Some of you will remember that my name appeared on the program of the Farmers' Institute which was held in this hall four years ago this winter. I was then in an unsettled state of mind. I was, like a great many other young people, undecided as to what line of work I would choose for my life work. I had thought of first one thing and then another, without choosing any particular work.

I had received a fair common school education, had spent one winter at Ohio Northern University, taking normal work, and had taught school two winters. Like many other young men, I did not know what I did want to do. I had thought seriously of studying pharmacy and becoming a druggist, but had a stronger inclination toward civil engineering.

Four years ago, when I was asked to take a part in the work of the Institute, I was spending the winter at home, feeding and caring for the stock on the farm. I did not care to teach and the condition of my father, who was then in the grasp of the disease which two years later caused his death, was such that I was needed at home.

My father had always encouraged me to fit myself for a profession. When I was at Ohio Northern University I took normal work, because I had not yet decided what course of study to follow. While in school I inquired about different courses and professions, but left school that year without choosing a profession. I expect the chief difficulty was the fact that there was no profession which I really cared to enter. Somehow, I always had a feeling that I would just as soon be a farmer.

Not having made a decision, and finding myself the possessor of a teacher's certificate, I decided to teach. I was advised by one friend not to spend my time teaching, but to go on and procure an education while I was young, if I ever intended to. I think he was right. If you ever expect to procure a better education, and have the means, do not stop to teach. You may never get started again. Whatever course you wish to follow, the sooner you do it the better. I had never thought of following teaching as a life work, so after two years I dropped out, and, as I told you before, I was spending the winter on the farm. So when I was asked to prepare a paper for the Institute, and was told to choose my subject, one in which I was most interested, I said I was more interested in deciding whether I should stay on the farm or fit myself for some other work. That was the origin of my subject. I was prevented from preparing and reading my paper by the serious illness of my father.

This fall, when I was asked to try again, I decided to take the same subect. This paper is no doubt quite different than I would have prepared four years ago. The writer has had four years, full of experience, to temper his opinions. Yet I think the conclusion would have been about the same. For I knew then, as I know now, that I have always been better satisfied on the farm than any place else. Then, I had about decided to be a farmer; today, I am well satisfied with my choice.

THE FARM OR A PROFESSION.

Under farming let us include the various agricultural pursuits, as grain farming, stock raising, dairying, fruit growing, etc. We might also include the men who fill the various positions at our experiment stations and other experts in agriculture. In professional life, we will include the many other kinds of work in which people engage.

Let me say right here, that I think farming is as much a profession as any other business. It takes as much energy, thought, ability and management to be a successful farmer of today as it requires to be successful in any other profession. Some may question this statement, saying, I would like to see a farmer go into the office and do the work of the doctor, lawyer or surveyor. In reply, I would say there are plenty of farmers who could do the lawyer's or doctor's work about as successfully as the professional man, who has never had any experience in farm life, could operate a farm.

Agriculture is looked upon by many young people as being a more lowly work and having less opportunities than what we are pleased to call professional life. They do not consider the farmer the equal of the man who works in the office. This may very often be true, as far as education goes, but the man who devotes his time to agriculture has as high and honorable a profession as the lawyer or banker.

What greater work could a man desire than to increase the fertility of the soil or to rear a better class of farm animals and raise better crops year after year!

Perhaps one reason why farming has been considered a lowly work is from the fact that it has been a commonly accepted idea that anyone could farm. If they were too dull to do anything else they could farm.

The dull sluggard may make a living from the farm, when he would starve at some other work; but between the dull, shiftless man, who barely exists, and the progressive, up-to-date, successful farmer, there is as much difference as between the downright failure and the highly successful man in any other profession.

Young man, when choosing your life work, do not consider agriculture beneath your ability. Do not for one minute think that you are too smart to waste your time in tilling the soil and raising live stock. For in whatever branch of agriculture you may wish to engage, if you will enter and endeavor to unfold all, aye, a very small part of the mysteries and possibilities that lie therein, you will find ample room for all the powers, ability and talent that you may possess. Provided, of course, that your ability and talent are of the right sort; for not all of us are by nature fitted for farming any more than all of us are natural musicians. We should try to find the work which suits us best. Strive to find your place in the world and fill it.

You ask how shall I decide where my place is? What am I best fitted for? I cannot tell you. No one else can decide for you. Each must make his own choice. Of course, others may advise and help you to choose wisely, but your own inclinations and desires are probably the best guide. If you feel that you would be contented and successful on the farm, by all means stay there.

Is there not a fascination and attraction about growing crops and thriving stock that appeals to you? Haven't you seen fine farms, neatly kept, or good cattle, sheep or other animals that you would like to own and care for? Don't you think an effort to be one of the best farmers in the county would be an interesting profession; as interesting as any other?

There are so many branches of farming, so many opportunities and different crops and kinds of stock, that you surely can find something interesting and attractive. Of course, farming has its ups and downs. The price of hogs may vary from seven to three and one-half cents. The seasons will be sometimes wet and sometimes dry. But where will you find a profession that has no drawbacks? In any work in which you may engage there will be some dark spots and disappointments.

It is not probable that we will ever accumulate great fortunes in agricultural pursuits and become a Rockefeller or a Vanderbilt, but how many young men who enter other professions will become millionaires? Money should not be the chief aim in life. What joy and satisfaction can there be in piling up wealth which some one else has produced and should rightfully enjoy? A farmer in moderate circumstances enjoys life better than a millionaire. The farmer's sons, as a rule, will be of vastly more account in the world than the pampered sons of wealth.

Let me quote to you what a man who has reached the mature age of 87 years and who has spent his entire business life on the farm, wrote in one of our farm magazines of recent date. He says: "After 87 years of experience and observation, I am convinced that the business of farming, on scientific principles, is conducive to more happiness and prosperity than any other occupation."

Agriculture may not be a stepping stone to political prestige and preference as some other professions are, yet we must remember there is room for only one governor at a time in each state, and where there is room for one senator or congressman there is room for a thousand successful farmers.

I recall the words of a man with whom I was once talking on this subject. He said, "It will cost you a good deal to fit yourself for a profession; and after a man has fitted himself, the next thing is to find a place. So many young men have a hard time to get a start and have to starve around for years." He told me there was much more room in agriculture. Where there is a place for one successful electrician, lawyer or doctor, there is room for a hundred farmers. The incomes of those who engage in these professions may look large, but we must remember their increased expenses.

One of the first thoughts of a person who wishes to fit himself for what we call professional life is an education. The boy who has been reared on the farm will know more about his profession and will have less to learn at the beginning, if he decides to engage in agriculturue. He has been receiving his education day after day through actual contact and experience. If we want to become proficient in a profession, we must equip ourselves with an education which bears especially on the particular work that we choose to follow. Why should it not be so with the man who wishes to engage in agriculture? If you have the opportunity and desire to equip yourself with a college course why not enter one of the numerous agricultural colleges? The purpose of these colleges is to equip young men and women for the business of farming, and give them a practical, scientific training for their profession, just as a law school trains its students to become lawyers.

Such an education will not make farming a soft snap. There will always be plenty of hard work on the farm. It should train those who receive it to direct their efforts so as to produce the best possible results.

If you feel that you have the ability to become a specialist why not strive to be an expert breeder and feeder of live stock, or an expert dairyman or a specialist in any line of agriculture? There are always great opportunities for the skillful in agriculture, as in other professions.

Many young people choose some particular work because they think it is easy—a soft snap, we say. There are few soft snaps in this world. The position which looks so easy will fool you when you try to fill it. The boy whose chief aim in choosing a profession is to get an easy place is not on the road to success. The men who have made their marks in the world have done so by diligence and hard work.

Some one may ask:" "Would you advise every country boy to stay on the farm. I would not. The lives of such men as Lincoln, Garfield, Horace Greeley and many others which we might mention, would refute such a theory. But unless you have a longing and desire for some other work, and feel that you would be better satisfied and more successful at something else, stay on the farm, and be a member of the grandest, most independent professions on the face of the earth—the American Farmer!

"DOMESTIC SCIENCE."

BY MISS ALICE PENROSE.

[Read at the Farmers' Institute held at Damascus, Columbiana county, February 26 and 27, 1908.]

To a great many people the term domestic science means practically nothing; it is just a name applied to a more or less theoretical knowledge of the so-called household arts; but if we say "home economics" it is an entirely different matter. That name implies something in which every housekeeper feels an interest in the ability to run the home economically, to get the most value for the least money; to make one dollar do for us what two do for our neighbor—not only in the sense of its money value, but also in its real value in health, in beauty or in pleasure. So when domestic science is mentioned, think "home economics," for that is what it is, the science that teaches the homekeeper to spend her time, strength and money to the best advantage.

Domestic science does not deal only with the care and cooking of the food, although that is a very important part of its ministry; it deals with every side of the housekeeping and home making, from the proper sort of chimney needed to create a draught, to the laying of the drain-pipe under the foundations, and from the choosing and making of the curtains to the laundering thereof. The object it has in view is to not only help us to do our work well, but also to help us to do it in the easiest way, and to apply to our work the simple, scientific facts that we have learned during our school life or since then. One very great argument in favor of having the domestic science course introduced into the schools is that the girl learns to apply this knowledge while it is yet fresh in her mind and to bring it home to her mother, knowing what she is doing and why she is doing it. She works in the chemical laboratory and there she finds that HCl acts on iron in such a way as to form a soluble iron chlorid, and with this fact in her mind, she goes into the laundry and, finding a piece of iron-stained linen, she removes that stain by placing the linen over a bowl of hot water and dropping HCl, or better still, muriatic acid—a commercial form of HCl—on it. Knowing that the acid may injure the cloth, she has near at hand a bowl of ammonia, into which she dips the linen from time to time to neutralize the acid, and when she has carefully rinsed the cloth in cool water, the deed is done. Just a word more about iron rust. So many times it will appear when there seems to be absolutely no excuse for it, and do you know where it comes from? It is the bluing that is in fault. Prussian blue, from which much of the commercial bluing is made, when acted upon by an alkali forms an iron deposit, so unless every bit of soap is rinsed from the clothing before it is put into the bluing water, trouble is almost sure to result.

She works in the bacteriological laboratory and learns that germs grow and multiply with wonderful rapidity when given warmth and something to feed upon, and that milk is one of the very best possible media for their growth So she goes to the dairy and turns to account this knowledge by cooling the milk quickly—for bacteria do not multiply to any considerable extent in cold substances—by covering it carefully to keep out the dust, remembering the bacteriological slogan: "Wherever there is dust there are also bacteria," and let me say that it is better, if possible, to cover the milk with something through which the air can circulate than to use air-tight covers. If the milk is kept in rather narrow-mouthed vessels, covers may be made by sewing together two or three thicknesses of cheese cloth with weights in the four corners and placing over the vessels. One of the advantages of these covers is that they may be scalded and aired between times of using. She thoroughly scrubs and scalds all the utensils used about the milk, thereby greatly reducing the danger of infection. Of course, there is another feature in the care of milk that is, if possible, more important than the care it receives in the dairy. That is the condition of the cows, of the stables and of the milkers, but in the presence of these dairymen, who probably do everything to insure cleanliness but boil the cows, I will not undertake to go into that side of it. I will only quote a Pittsburg doctor's answer to a dairyman who had assured him that all the dirt was centrifuged out of their milk, "There is something wrong with milk that has to have the dirt taken out of it." She studies physiology and learns of the wonders of the human machine and of the foods that are necessary to keep that machine oiled and in good running order. She learns that we need starch and sugar to give us energy and she also learns that unless the starch is thoroughly cooked, it will ferment and make trouble for the digestive organs and their owner. She learns that we need fat to produce heat in the body and to keep things running smoothly, for it is a lubricator inside as well as outside the body, and she learns that when this fat is heated to too high a temperature a change takes place that makes it hard to digest on account of the presence of an acid which the heat liberates and which acts as an irritant in the stomach. She learns that we must have proteid foods to build up the tissues, and she learns that meats and eggs and milk are the foods that contain this proteid in its most available form. She learns that the minerals in green vegetables are most necessary to the growth of the bones and teeth and are a tonic to the blood. And above all and beyond all, she learns that we *must* have plenty of cool, pure water, or we cannot keep ourselves in a healthy condition; but about that water she learns something else, she learns that the germs of many diseases, and particularly typhoid fever, are carried from place to place by means of the underground water, and she goes home and looks into the matter of the water supply, and if the well is so situated that there is any chance for the house or stable drainage to reach it, she sees to it that the water is boiled before it is used.

She goes from the physiological laboratory into the kitchen or kitchen laboratory, as it is now proper to call it, and here she learns to prepare all these foods in their most attractive as well as their most nourishing forms, for she realizes that a cheery dining room, a daintily set table and carefully arranged food are in themselves appetizers. Then she turns her mind to cookery, and learns that an egg cooked at a low temperature, with its white tender and jelly-like, has a food value equal to the best beefsteak, and that the same egg cooked in hot ham fat and sent to the table tough and hard, has all the irritating quality of a misplaced mustard plaster; that the former is an inexpensive food, even when eggs are selling at forty cents a dozen, because it gives to the body a great deal of nourishment without causing the digestive organs to work overtime; and that the latter is expensive with eggs at one-half cent apiece, because it uses up so much energy in the process of digestion that it robs the body instead of feeding it. She learns that a piece of round steak quickly seared over the outside to keep the juices in and then given a long, slow cooking to soften the muscles, made tough by exercise, may be made into a dish to gladden the heart—and stomach—of the man who eats it, and that the tenderest of tenderloin, sizzled on a warm pan, may and does become a mighty good substitute for sole leather. So many people have the mistaken idea that because a piece of meat is tender it must, of necessity, be more nourishing than the tougher cuts. It is not! The muscles that have been exercised, the muscles of the fore and hind legs and of the neck are the ones that hold the most nourishment, and it is the thoughtful and economical housekeeper who can take the tough meat at 18 cents a pound and, by careful preparation and seasoning, make of it a rival and a successful rival of the 40-cent tenderloin. She learns that "a penny saved is a penny earned" and that skill in the preparation of "left overs" helps to fill the pin-money pocket; so, instead of the inevitable hash, she makes the bits of meat and vegetables sometimes into a meat-pie, sometimes into a soup or salad, but whatever she makes of it, she remembers that left-overs always require more seasoning than fresh-cooked foods. In fine, she learns to become the prototype of the woman of whom it was said: "She looketh well into the ways of her household."

You are gathered here to discuss the many points of interest and importance to the farmer; what to feed your fields to bring the best yield of hay or grains; what to feed the cattle to produce the greatest flow of milk or numbers of pounds of flesh. But have you stopped to think about the food necessary to build up the brains and muscles of the boys and girls growing up around you? We are too likely to think of that as a matter to be settled entirely by individual taste, and so we allow the child to make his breakfast from sausage and buckwheat cakes, to fill his pockets with cookies to be eaten on the way to school, just when the work of digesting the breakfast is going busily on; into the lunch-basket go cold pork, a wedge of pie, three doughnuts and a pickle, and it only needs two more doughnuts when he comes home from school, and a supper that includes hot bread, to put him in the position of this youngster:

POOR LITTLE WILLIE.

"Little Willie isn't well—
Seems to have a bilious spell.
We're afraid he's delicate.
(Had some apple tarts at eight;
Nine o'clock 'twas cookies; then
Followed ginger-cake at ten.
At eleven slipped around
And some cheese and doughnuts found).
Didn't heed the dinner-bell;
Wouldn't eat; he isn't well."

At no time in the life of the individual is nourishing, easily digested food so important as it is during the school days, when both brain and body are developing and the foundation for the whole life is being laid. Every part of the body must be fed, and well fed—plenty of bread and butter, milk and eggs, fruits, vegetables and well-cooked cereals, but, as we value the health of the growing generation, let us have little rich cake and pie, fried foods and candy at all hours; and do let us remember, for ourselves and for our children, to chew our food thoroughly, to eat slowly and to have good cheer at meal time.

I have been very much interested in the introduction of domestic science into the work of the Farmers' Institute. No one has the opportunity to practice the science of good and healthful living as has the farmer's wife, with her garden, her dairy and her poultry yard; and the science of the home is so closely allied to the science of the farm that it seems only reasonable that an institution for the promotion of the one should promote the other also, and I am sure that the members of this institute would find an added interest in the work if a reading course in home economics were added to it.

There are many people who agree with Owen Meredith:

"We may live without poetry, music, or art;
We may live without conscience, and live without heart;
We may live without friends, we may live without books;
But civilized *man* cannot live without cooks."

And, since the mission of woman on earth is to cater to the wants of man—it must be so, for the men say so themselves—let us be educated cooks!

"WOMAN'S SPHERE."

BY MRS. LUNA SKINNER.

[Read at the Farmers' Institute held at Barnesville, December 16, 1907.]

Home is woman's sphere, the one place where she is queen. Can there be anything in life nobler or higher than being able to make a home a quiet, peaceful, restful place, where each inmate can be his true self, away from all the cares and trials of the world?

The woman on a farm leads a very busy life. Many times she works far beyond her strength. Too many people, especially our brothers, depreciate the value of a woman's work. I wonder sometimes if they realize how much their comfort depends on the home-maker?

There are plenty of labor-saving machines that would lighten her tasks, if she had them; but I have noticed too often that all the spare money went to purchase something the good man wanted (I will not say needed), while the woman struggled along with a leaking washing-machine (or perhaps without any), an old-fashioned, back-breaking churn, and only half enough cooking vessels. Just imagine having to cook one article, emptying it out and washing your kettle before placing another on the fire. Don't you see what a waste of time, strength, patience and fuel that is?

Now, I am sure none of our brothers present carry on such an unequal partnership, for you are all prosperous farmers and can afford to let the women have their share of labor-saving devices.

But there are other ways of lessening our duties. So many of us spend one-half or more of our time in preparing something to eat. Think of the time it takes to make pies, cakes, puddings and all such indigestible stuff that the system does not require.

Why don't we learn to cook only simple, wholesome food? Is it because our friends and neighbors go to so much extra trouble when we are invited to take dinner with them that we think we must do likewise? Why can't we be independent and more sensible about such things? Don't we do a whole lot of unnecessary work? Wouldn't we be happier and enjoy better health if we lived more simply?

T. B. Terry says: "There is a tremendous amount of intemperance in eating. You will not forego the pleasure of eating rich pastry and fancy dishes. A hearty appetite makes wholesome, plain food taste better. We hear much about how good times would be if those who drink would spend the money for comforts of life. The American people could save more than is paid for liquor by banishing dishes from their tables that do harm rather than good; could easily save something like one thousand million dollars a year; could do more work, enjoy life better; could almost banish sickness and put off death until it came of old age. Then think of the saving of time to the women who cook. How much more time they could have to care for their families and read and rest, or if they cared to employ this time at some profitable work, it would probably pay the national debt in one year. Probably about one-half of the food eaten by Americans supports them, on the average; the other half pleases the taste, but only makes trouble later."

If this is true, how much suffering we could save ourselves by plain cooking. If we allow our home duties to consume all our time, how narrow and selfish we become. We need a wide range of interests. Our world is no greater than the number of objects to which we can attend with interest.

We want our homes to be as pleasant and as nicely furnished as our means will permit. But how often we make the mistake of buying things to go in the parlor, to keep shut up for fear of spoiling their beauty, and only occasionally opened when company is expected.

If the same amount of money was expended on kitchen conveniences, where they would be in daily use, it seems to me it could not help but give greater pleasure to the average woman.

Let the kitchen be supplied with every modern convenience before you begin on the parlor. How much easier housework becomes if everything needed is close at hand. A sink with clean soft water near the work table saves a great many steps. Then, if the cellar-way opens in the kitchen, how much better than to cross two or three large rooms or travel half-way round a house to reach it. We want to have everything handy and convenient, so we can do our work in the easiest way and in the shortest possible time, so we will have leisure for reading, studying or grange work.

The grange, with its varied works and pleasures, is a boon to the farmers, but more especially to their wives and daughters. It gives them a chance to get away from home cares and duties, to mingle with their friends and neighbors and enjoy the good things always in store for the granger. If you do not belong, my farmer friends, let me urge you to lose no time until you become a member. Of course, it means more work, but it is pleasant, profitable work that cannot help but educate and elevate all those who are striving for the best things in life, and you will forget the work in the pleasure you receive.

We each have a work to do, whether it be in the home (and that should be our first consideration), the grange, office, store or elsewhere; there is some little corner in this old world for everyone of us, and is it not a glorious thing to know that no one else can entirely fill our places. If we slight our opportunities or neglect our duties, they must remain forever undone.

Not many of us will ever be able to accomplish great deeds, but is it not the little things that make life worth living after all?

"There's never a rose in all the world
    But makes some green spray sweeter;
There's never a wind in all the sky
    But makes some bird wing fleeter;
There's never a star but brings to heaven
    Some silver radiance tender,
And never a rosy cloud but helps
    To crown the sunset splendor;
No robin but may thrill some heart,
    His dawnlight gladness voicing—
God gives us all some small, sweet way
    To set the world rejoicing."

"OPPORTUNITIES FOR CULTURE IN THE FARM HOME."

BY EMMA BLACKWOOD.

[Read at the Farmers' Institute held at Fairview, February 5, 1908.]

It is a well-known fact that plants crave light. As you look at the geranium in your south window, you notice that the leaves all turn in one direction. Your sense of symmetry prompts you to move the plant about. In a few hours, or days at most, the leaves are again facing the sun. In our nature, as well as in that of the plant, there is this hunger for light—not mere physical light, but light in whose radiance we shall grow unto the stature of the Perfect Man.

The idea is prevalent that culture is the precious heritage of years spent in college or university. I would not minimize the benefits of the training received in our higher institutions of learning, but for the encouragement of the many who cannot attend these schools, I would say there are opportunities for culture outside of college halls. Carlyle says: "The true university of these days is a collection of books." The quiet of the farm home, the leisure, particularly of the winter season, afford the opportunity to read. "In the best books great men talk to us, give us their most precious thoughts, pour their souls into ours." People go miles to see Roosevelt and, perchance, to hear him talk for a few minutes. Through his books we may meet him at our own firesides, where he will converse with us for hours. We have the same opportunity to become acquainted with Hawthorne, Milton, Shakespeare—with God's dear Son. Shall we spend our time in fruitless conversation about the weather or in gossiping over the telephone, when we can have this intercourse with "the chosen and the mighty of every place and time?"

If reading is to be a means of culture, we must choose our books with care, and read the few chosen with attention. It would be useless to try to read the five thousand books published in America every year. A young lady confessed that she read four books a week—all novels—but that she scarcely ever remembered any of the first when she had read the last. Her reading was not only of no benefit; it was an injury.

Some one has said: "Excessive indulgence in sensational stories dulls the intellect, impoverishes the memory and shrivels the soul." But in rural districts, where we do not have access to the public library or even to the circulating library, the question is not that of reading too many books, but of reading the few which are necessary for our development. Some farmers will tell you, when you speak to them about this matter, that they cannot afford books. But books are so inexpensive that everyone can afford them. Others will say to you: "What would the boy do with books but idle over them, when he oughter be at his work? Book-l'arnin' will not help him to grow taters." The farmer's ambition for his son should be to see that son grow into a man—a manly man. The savages whom Columbus found in America could grow potatoes. Parents, let me beg of you that you put on your reading table a daily newspaper, one or two farm journals and several other papers and magazines. Not only these, but books, good, wholesome books. It would be just as reasonable for you to deny those in your home food, as to deny them books.

The leisure of the farm home affords the opportunity also for the study of music, the art which Luther says "makes people milder, gentler, more moral and more religious." If we did not underestimate the influence of music, we should have more of it in our homes. When Saul, Israel's first king, became insane, David banished the evil spirit by the silvery tones of his harp. A farmer's wife, who had many hardships, said she could, while playing on her piano, forget everything but her music. Tired nature in these intervals gained strength to bear the burden a little longer. Shakespeare says: "Know the cause why music was ordained? Was it not to refresh the soul of man after his studies and his usual pain?" There should be in every home musical instruments, under the spell of whose harmony cares and vexations would give place to hope and good cheer.

> "For mine is the Lay that lightly floats
> And mine are the murmuring notes,
> That fall as soft as Snow on the sea,
> And melt in the heart as instantly!
> And the passionate strain, that deeply going,
> Refines the Bosom it trembles through,
> As the musk-wind, over the waters blowing,
> Ruffles the wave, but sweetens it, too."

The farmer's work, as well as his leisure, affords him the opportunity for culture. "Work," according to Henry Churchill King, president of Oberlin college, "is a chief means in the attainment of the largest and richest life." Too often men think that work is merely the means of obtaining a livelihood. It is that, but it is more. It is the chief means of our development. The author of the sermon, "Blessed be Drudgery," says: "Beyond all books, beyond all class work in school, beyond all special opportunities of what I call my education, it is this drill and pressure of my daily task that is my great schoolmaster. My daily task, whatever it is, that is what mainly educates me. All other culture is mere luxury compared with what that gives me." What is true of work in general, is particularly true of the farmer's work. Work on the farm compels a knowledge of a variety of subjects. The farmer must know what to sow and when to sow; he must know what to buy and when to buy; he must know when to put his grain and his stock on the market. Improved methods of farming place in his hands all kinds of machinery. He must use, and use skilfully, the cultivator, the drill, the mowing machine and the binder.

The work indoors has its training as well. Some one has said of cooking: "Ask a woman what cooking means and she will tell you it means the patience of Job and the persistence of the Pilgrim Fathers; it means the steaming and stewing, the baking and boiling thrice daily, spring, summer, autumn, winter, year after year, decade after decade; it means perspiration, desperation, resignation. From her judgment and reason she must evolve triumphs which depend on salt, pepper, sugar and herbs. She must know how soon, how much, how long and how often. She must know quality, quantity and cost. Then she must rise above it all and be a lady." Farmers' wives may find the opportunity for culture they are seeking in what they may consider the homely art of cooking.

The farmer's work, because of its importance, is a means of his development. Thousands are dependent upon the products of the soil as a basis of their occupation. All are dependent upon the products of the soil for the food which sustains life. The farmer's occupation is, therefore, the most important. The physician, with all his skill, cannot heal the body if the patient does not have food. The minister in the famine district must feed the hungry before the message of God's love will appeal to them. The farmer amid his sweat and his toil ought to be cheered by the thought of the service he is rendering others, a thought which will contribute to the perfecting of his character.

The association with nature makes the farmer's work the means of his development. He is out under the blue sky in God's pure air and sunshine —not in the dusky office or mill. He sees the bow of promise in the cloud and sings with the poet:

"My heart leaps up when I behold
A rainbow in the sky.
So was it when my life began;
So is it now I am a man;
So be it when I shall grow old,
Or let me die."

From the moment "rosy-fingered dawn, child of the morning," greets the farmer, until "night drops her sable mantle and pins it with a star," nature seeks to awaken noble thoughts within him. She surrounds him with choicest art, God's handiwork, which she exhibits in hill, glade and glen. She breathes upon him sweetest music through harp of forest brook and vernal shower. And as he walks with her, talks with her from day to day, she entreats him "to look up through nature to nature's God."

If we should, by any chance, feel that we do not have opportunities for culture in the farm home, let us resolve to create opportunities. "The difficulties overcome will themselves become stepping stones to help us on to higher things." Society needs men and women of brain and brawn today as much as in any age of the world's history. We cannot hide the talents committed to our keeping without being false to our trust. To those of this institute, therefore, I bring the message of the old Grecian philosopher: "Be the best man or woman God has made it possible for you to become."

"OUR RURAL SCHOOLS, PAST AND PRESENT."

BY O. P. BEVINGTON.

[Read at the Farmers' Institute held at Hicksville, December 11, 1907.]

It is certainly in harmony with the work of this institute, where you have been considering various questions pertaining to the farm, that a brief period be given to thought about the young people, who perform such an important function in its activities, and the schools which they attend.

Not alone in connection with agricultural affairs is the farm boy to be considered, for, grown to manhood, his personality is felt in all the activities of life.

Education has been, and is, the most universal concern of mankind. First, "because it touches and relates to every phase of human activity." Second, "because it is a process which continues in time from the cradle to the grave." From the spontaneous, impulsive activities of youth, through the reason and judgment of manhood to the more sober reflections of the aged, when all the activities of life are brought together into one grand unity, man is being educated.

EDUCATION IS INEVITABLE.

Considered simply as a process of change in the sequence and character of one's mental activities, education cannot be avoided. So long as there is response, either voluntary or involuntary, to stimuli, so long as there is expeperience, man is being educated.

But education without aim or purpose may be harmful as well as helpful. So the child's education is not left to the experience that may come to him by chance. The parents, as a result of their own experiences, have a conscious educative ideal, and at once they begin to condition the experiences. The child's environment is made such that his education conforms to their conscious ideal—this we call his home training.

Before public schools were established, the home was the school where the child received his elementary education. Lincoln's early education was of this character. We recall with pride the story of his youthful experiences, how he did sums on the back of a fire shovel before the blazing hearth.

This was very like figuring on the ground, as Willie understood the minister, but not as the minister intended, however.

"Teacher," said Willie, "did people use to figure on the ground?" "Why, Willie?" said the teacher. "Why, because," said Willie, "last Sunday I heard the preacher read a verse from the Bible that said, 'And the sons of men multiplied on the face of the earth.' "

Schools are social institutions. Society found that the process of education should be conducted by some agent other than the home. So, for economic and humanitarian reasons, public schools were established.

The materials of education are of social origin and of value only as they make for the conscious ideals of society, which are ever changing. In this, we can see the cause of the progress and change in the text books and the course of study.

We read that during the Colonial days schools were few and generally poor. Boys, when taught at all, learned to read, write and "cast accounts." Girls were taught even less. Many of the children born when the colonies were new grew up unable to write their names. However, we should remember that there were very few books and no newspapers until after 1700. There was little to occupy the mind except the Sunday sermon.

As time passed and the country advanced as a governmental power, society realized the need of training for citizenship, and history (later civics) was given a place in the course of study for elementary schools. Again, as a result of another conscious social ideal, physiology was added, and not many years ago, because of the growth of the temperance ideal, scientific temperance was made a permanent part of the teaching in physiology. Not only by additions have the materials of education changed. Text books have been revised and some features eliminated to conform to the demand of the social group. Alligation is no longer found in modern arithmetical texts. "Twenty-five years ago the arithmetics contained alligation for the same reason," says Keith, "that buttons are now put on coat sleeves, viz: social habit." Geography was largely descriptive; now commercial and industrial geography constitute a very important part of the text book.

Why these changes? Simply because society demanded it. These slow, but permanent changes (so long as the social need exists) are not a result of chance. They were not done "under a bushel" to meet the selfish ends of a few individuals. They are only links in the continuous chain of human progress and evolution.

BOXWELL-PATTERSON LAW.

A constantly increasing number of pupils from the country desired to attend some high school. To provide for these the state legislature passed the Boxwell-Patterson law, with which you are familiar.

NEEDS OF OUR RURAL ELEMENTARY SCHOOLS.

What are some of the needs of our rural elementary schools? Again we turn to society, that has established the schools, originated the materials of education and brought about all the changes in school administration. The first answer comes in no uncertain tone, supervision and gradation.

Since the enactment of the Boxwell-Patterson law, which makes ample provision for our pupils who have *thoroughly* completed the elementary school work, it is noticeable that many of the pupils who pass the examinations are not prepared to take up high school work. Especially is this true of pupils coming from townships where there is no supervision. They are deficient in one or two branches, usually grammar or language, consequently they are obliged to spend a year in the grades before entering the high school. The cause is apparent.

When no graded course of study is required, pupils come to school with books of their own selection, often taking up the study of geography and history the same year, and in some instances grammar is omitted entirely, or shelved as long as possible. The teacher has no outlined course to use as a basis of classification. Her business is to teach, not to supervise. No record is left with pupils or school at the close of the year for the succeeding teacher, who starts the pupils at the beginning of the texts; again there is a rush to arrive at the last page of each text before school closes.

THE STATE CONSTITUTION DEMANDS IT.

The state constitution of 1851 requires that the legislature shall provide for an efficient system of common schools throughout the state (Art. 6, sec. 2); also that all laws of a general nature shall be uniform in operation throughout the state (Art. 2, sec. 26). Ohio cannot have an *efficient* system of common schools until she has a *system*, and there can be no system until every school is under *supervision*.

The city, village and special schools are practically all under supervision, and the same step should be taken by all township boards of education. The new school code (Sec. 4007) provides that all boards of education are required to prescribe a graded course of study for all schools under their control, subject to the approval of the state commissioner of common schools. To comply with the provisions of this section, supervision is necessary.

If supervision means anything, it means supervision of the teachers, pupils and the general work of the schools. County inspectors might be practicable, but the county is too large to be made the unit of *supervision*. The visits of the supervisor would, of necessity, be "few and far between." He would scarcely become acquainted with the character of the work of the several teachers before the close of the school year, to say nothing of special needs of districts and a school acquaintance with the patrons of the school. Many times he would not be accessible when needed. The township is the logical unit of supervision. Where townships cannot afford it, two townships may combine. This method would be superior to that of county supervision. Nine of the twelve townships of Defiance county are now under some form of township supervision.

BETTER EQUIPMENT.

Another need of our rural schools is better equipment. Tools are necessary to carry on the work of every industry or profession. The mechanic, the merchant, the dentist, the preacher, all provide themselves with tools needed in their several lines of work. Thus the teacher should equip himself. But there are certain things that apply directly to the schools and the pupils—not texts, but appliances to amplify and "tie in" the substance of the text. These should be provided. Most important of these is the library of well-selected books, adapted to the needs and capacities of the different grades.

Agriculture and music should be taught. Vocal music, or singing, is a delight to all children and can be learned as easily as arithmetic or reading. Its tendency is elevating, creating a wholesome moral atmosphere, and can be made an important factor in the government and discipline of the school.

Out of what may be termed nature work there has grown *elementary* agriculture, in which a study should be made of the physical composition of the soil, the most common plant foods and the means of producing them; common physical characteristics of the soil, plants and animals; the adaptation of plants to certain soils; the best methods of cultivating and disposing of crops; the economic value of birds and insects; how to destroy plant and insect pests; the care of stock and many other subjects having direct application to rural life. It is the most beneficial, the most practical form of nature study. It should be taught in the elementary schools, where there are more children than in the high school. Much can be done toward habituating them to a life of investigation and careful reading.

PERMANENCY OF TENURE.

One year in a school is entirely too long for a non-progressive teacher (if a *teacher* can be non-progressive), but entirely too short for the teacher who makes her school her constant care, who is progressive and efficient.

GREATER REGULARITY IN ATTENDANCE.

My experience has been that punctuality in attendance is a marked feature in the rural schools. The matter of "times tardy" gives the teacher very little trouble, but irregularity in attendance is just as much in evidence. This is true of the larger pupils, especially the boys.

In the fall they are kept out of school to assist in harvesting the crop and preparing for "*winter's chilly blast*," then they start to school and continue (*irregularly*) until spring, when they drop out a month or two before school closes to prepare for seeding and *summer's hot blast*. If a course of study is to be pursued successfully pupils must attend regularly throughout the school year.

In answer to the following question: "How much money is a day at school worth?" Dr. N. C. Schaeffer, Superintendent of Public Instruction in Pennsylvania, and one of the foremost educators in our land, has made an interesting calculation, the substance of which is as follows: Each boy and girl during his or her life will earn money, or in some way, by use of time and energy, add to the wealth of the nation. To increase this power to add wealth to the nation the country spends each year millions of dollars to educate its coming citizens. The average earnings of an uneducated man are about $1.50 per day. He works about 300 days per year and continues this process for about 40 years. His life earnings will therefore be $1.50x300x40, or $18,000. The salaries of educated men vary very much more than do those of the uneducated, but if you should strike an average of the earnings of educated men, beginning with the president of the United States, officials of insurance companies, of railroads and corporations, running down the scale until you come to the lower salaried men, the average earnings would prove to be about $1,000 per year. For 40 years $40,000 would be the average life earnings of an educated man. Subtract $18,000 from $40,000 and the difference is $22,000, representing the approximate value of a boy's time spent in school getting an education.

The average time it takes a boy or girl to get a good education is said to be about eleven years. The average number of days spent in school each year is about 200. In eleven years of school life there are therefore 2,200 days. Dividing $22,000, the value of an education to a boy, by 2,200 gives the average value of a day in school as $10.

Is the boy worth $10 per day to you on the farm if kept out of school? Is it economy or prudence to keep him out of school? Can the nation afford to make the sacrifice? And this takes into account only the dollars and cents side of the question, omitting entirely the other and greater values of an education.

"HOME MAKING."

BY MRS. P. W. PLYMIRE.

[Paper read before the Farmers' Institute held at Sabina, Clinton county, February 21, 1908.]

The old saying, "Be it ever so humble, there's no place like home," is just as true today as it was when it was first written. It may be a rude, rough home, at the foot of some stern, snow-clad mountain, or it may be a beautiful mansion in some city, but wherever we wander, we look back to it with utmost interest. Home making is not made up of a simple round of cooking, sweeping and sewing. There is a vast difference between home making and housekeeping. Zeal for cleanliness may be carried too far for family comfort. How true is the saying that "some are more nice than wise." As husband or children come into the house they are met with, "Did you clean your shoes?" "Now don't make a muss," and a number of such things. It's don't this and don't that until their lives are miserable, and the husband goes off to a club, and the children, as soon as they are old enough, seek more congenial company. We must not forget that home-making is much more important than housekeeping, and that the house is for us and not we for the house.

When Mrs. McKinley first came to the White House, she was asked to give her views on an ideal home. While she merely talked for publication, she however said this: "Wealth cannot make any home ideal; power cannot make home ties more sacred; social standing will not uphold a home. The ideal home is where husband and wife and children all have a common purpose—the purpose of love and help for one another. Husband and wife may have many varying opinions, but when, above their separate views, rises the spirit of unselfish love, they bring the home as near ideality as it can be. More homes are disintegrated through selfishness than any other one cause. Love can have no affinity with selfishness. Love is invariably sacrificing, and when two or more stand together in this spirit we have the home beautiful. From it radiate the purest influences. All life is brightened by it. The incense from its altar rises to heaven."

One who had such thoughts as those ought to have been the first lady of the land. It goes without saying that the one who is at the head of a home can have no more important duty than that of knowing how to carry on her domestic affairs or seeing that they are carried on. She has a right also to tell herself sometimes this is not all—and to hear the outside world calling for the woman that is needed to take interest in what appeals to the soul, the social side of her nature. We believe that the mother ought to give a sensible portion of time to social matters for her own sake and for that of her family. Society not only brings polish, but it aids in the process of personal development. It is not only the right, but the duty of every woman to appear neatly and appropriately dressed at all times. Social attrition gives us more than we realize. It is like mental fresh air let into the home society.

Much is said about the faults and failings of the average wife, but a careful silence is often preserved concerning the trying ways of the lords of creation. Having wooed and won his wife, man often thinks that nothing more is expected of him. He is mistaken. He must make her his partner, and give her a fair divide in the pleasures and perquisites of life. Being a woman doesn't make a high-spirited individual enjoy begging. If husband and wife want to make home pleasant for their children (for there is no ideal home without children) they must respect each other's prejudices and give to each other the same they demand for themselves.

Be cheerful; it is better to live in sunshine than in gloom. If a cloud rests upon your heart turn its silver lining to your friends and cast the glow of cheer upon them, and the cloud will give way before the brightness and joy of its own light. The art and science of home making is in its infancy. There is much to learn. What we want is instruction in how to do the work better with less energy; new methods, where new are better than the old; how to make our homes beautiful and healthful, from which we can send our families into the world with strong, alert bodies, tenanted by clear minds and clean hearts. We want more leisure for improvement, music, reading and social life.

Human happiness is the acme of earthly ambitions. "What made you leave the farm?" was asked a young man, who had gone to the city to find work. "It was so lonesome in the country; just work all day and sit around somewhere till bed time. I got sick of it." Now if that young man had had a home where there was a homey atmosphere he would not have left it for the city, with its many temptations. Good books, magazines, papers, games and music are what we must have if we keep our families at home. They want something to interest them, something to talk about, someone who is interested to talk to. Someone has said that the five senses of man are satisfied on the farm. "Fruits of the field and garden for the palate, perfume of God's fresh air and flowers for the nose, the petting of the stock for the touch, the beauty of the land for the eye and the music of the barn yard for the ear." This is true, if men and women will only take time to see, taste, smell, hear and feel the beauties and advantages of farm life.

The cause of so much discontent on the farm is overwork. The farmer and his wife undertake too much. They are ambitious to accumulate and unconsciously drift into the "all work and no play." More good, common sense is what most people need. As accumulations of dirt are always perilous, the home must be clean, but better tolerate a little stain here or finger-mark there than tax physical energy past the limit of daily creative capacity.

Home making means a study into things; an inquiry into the greatest question of life. Here, under one roof, clusters a little circle of wonderful beings, human beings; yet here they must live and live in harmony, for the home must be the center of joy else it is not really home. A home maker should be a good housekeeper, but a good housekeeper is not always a good home maker. We have heard it said that "the best way to a man's heart is through his digestive organs," and be this true or not, it must be confessed that a bad dinner is a trial to a man's affection if often repeated. No man wants his wife wholly given over to house work. The happy medium is what is wanted. Don't be afraid of a little fun in the home. Don't retreat behind your evening paper and order the boys and girls to be as still as mice. Don't shut up the house, lest the sun fade the carpet. Don't shut up your heart, lest a hearty laugh shake the cobwebs that are being woven there. If you want to ruin your sons and daughters, let them think that all mirth and enjoyment must be left behind when they cross the home threshold. Young people must have fun and relaxation somewhere. If they cannot find it in their own homes they will find it elsewhere. Therefore, make your homes so bright and pleasant that they will not be tempted to look further for what their natures crave. The memory of such a home will be the best safeguard they can take with them into the wide world when they go forth to fight the battles of life. Half an hour of unchecked merriment around the firelight of a happy home blots out the cares and annoyances of the day, and we, as well as the younger ones, are made happier by it.

So don't be afraid of a little fun in the home. We must study the science of the ideal life. The foundation of the truly ideal and beautiful home is the religious sentiment. There are two things growing always together: the sense of obligation to God and duty and the sanctity of the home. Our homes are what we make them. We can be happy wherever we are, whether in city or town, but

"The sweetest life for man below,
And freest from all harm,
Where ties of social bliss will grow,
Is found upon the farm.
There purest air of Heaven he breathes,
The man behind the plow,
While healthy tan, like laurel, wreathes
His clear. unsullied brow.

"The odor sweet of flowers rare,
And carol of the birds.
There mingle in the balmy air
With lowing of the herds.
While rippling streams, in field and wood,
With clear and sparkling tide,
Break nature's dreamy solitude
As here and there they glide.

"The farmer heeds no master's call,
Has none but self to please.
Goes when he will, or not at all;
When weary takes his ease.
His home to him a castle grand
Though humble it may be,
And monarch of his own fair land,
To no one bends the knee.

"No speculation's dazzling scheme
To lead his thoughts astray;
Not rich at evening's golden gleam
And poor at break of day.
No stocks or bonds his peace to mar
By their uncertain worth;
His holdings always up to par,
His bank old mother earth.

"Though waiting months for recompense,
Yet still he holds the key;
And by his thrift and diligence
Brings sweet prosperity.
Unlocking, by his honest toil,
The treasures of the sod,
He feeds the world from out the soil
And lives near nature's God."
—Geo. W. Armstrong, Columbiana County, Ohio.

"WHY GIRLS SHOULD LEARN TO DO HOUSEWORK."

BY MRS. A. B. STEPHENSON.

[Read at the Farmers' Institute held at Cloud, Morgan county, December 11, and 12, 1907.]

No doubt some of you have heard girls say in a sort of half-proud, scornful way, "I don't know anything about housework," talking and acting as if she were to be congratulated for her ignorance, instead of pitied for her stupidity. If you have you know what a feeling of pity swept over you, and you thought, what a foolish girl! Then you went back farther and your next thought was, what a foolish mother she must have.

Well, there are scores of such mothers, and the writer is acquainted with some of them. What is the cause? This is a question often asked and we think the reason lies in the fact that hundreds of American girls are brought up to look upon housework as degrading. This seems to be back of it all. Some mothers say, "Oh, but I want my daughter to have a good education, so she will not have to work." Certainly; so does every intelligent mother. Every American girl wants the very best education to be attained. But does an education secure any man or woman from the necessity of eating and earning his own living?

She is a teacher some will say. Very well, teaching is a grand, good (I had almost written *work*, but perhaps *play* would be the proper word to use). What an insult to the great army of workers in the public schools of America. It is well known that brain work is far more exhausting than manual labor. Why should it be thought more honorable to instruct a child mentally than to cook the food that nourishes the child's physical being and makes a clear brain and strong mind possible? Why should it be less honorable to broil a beefsteak than to eat it? It is not, and every girl ought to realize the fact.

There are numbers of girls trying to fit themselves to enter some of the professions who are incapable of doing what they propose, but who might cook a meal to perfection and keep a kitchen in faultless order did there not exist a silly notion that to make one's living by doing housework was not refined. Let no one misunderstand me. Every girl has a right to all the educational training she can get. Every girl has a right to be a teacher, a doctor or anything that nature has fitted her for. The writer is proud of her sex and proud of the fact that so many noble women are capable of taking their places beside our men in the learned professions. But let it be understood that any woman's work, or any human being's work is simply that for which nature has best fitted the individual, and that an educational training does not create new talents, but simply trains those already in existence and gives their owner more power in his own special field of labor.

If housework could be lifted out of the realm of so-called drudgery and made a sort of trade or profession (and better paid), there would be scores of bright, good girls take their places in the kitchen to earn their living honorably, without fear of losing their standing in society. Then the servant problem would be solved. It is a sad fact, in the cities at least, that nothing is asked concerning a girl beyond that she is somebody's cook or chambermaid, and they refuse her their friendship or even respect. If every mother would train her daughter to believe to do housework is a necessary part of her education and put the theory into practice, this state of affairs would be changed. But so long as girls are brought up to consider housework beneath their dignity, they will look down on those who perform it. I hope that no mother here has the erroneous idea that her daughter need do no manual labor or housework, for she will have great need of this knowledge if she ever expects to marry. Some mother may say, I expect her to marry well and have plenty without working for it. They may, and they may not. Cupid is a very contrary little god and doesn't always go the way you might wish. A girl is just as likely to fall in love with a poor man as not, and you know what usually happens when a poor man marries a girl who has no idea of housekeeping. Either the domestic peace is destroyed by poor cooking on one hand and comparisons with "mother's cooking" on the other, or else there is a perpetual strain to provide servants for the kitchen when it can be ill afforded.

Aside from all this, every woman ought to know how to keep house, though she need not do a stroke of work herself. She should be competent to manage her household; this she will not be, if she knows nothing about it. If she is going to be a professional woman and does not intend to marry, she will be all the more womanly for knowing something of the art that has been, at least, a part of woman's work in all ages.

It has become quite the fashion for society belles to patronize cooking schools. These are steps in the right direction and are good, so far as they go. But as the place to learn to plow is right in the furrow, so the place to learn to cook is right in the kitchen, where the work has to be done regularly and other work needs to be done besides making fancy pudding, angel food, etc. Never meddle with fancy dishes till you have learned to cook a plain, substantial meal and bake wholesome, light bread. It is not mere disagreeable drudgery, but just good exercise for a healthy young girl, and you will grow quite as much interested in it as in geometry and Latin.

Now just a word in conclusion to young girls. There is an old adage, and I half suspect it is true, "If you want to reach a man's heart, you must reach it through his stomach."

"THE EAR ROW TEST. WHAT IS IT?"

BY J. S. PEEBLES.

[Read at the Farmers' Institute held at Sabina February 22, 1908.]

Probably no other plant has undergone greater changes or lends itself so readily to change at the hand of man as the corn plant. A prominent corn breeder recently remarked: "You can do anything with corn, if you have patience and good judgment. The position of the ear can be changed, the size and number of blades increased or diminished, and the ear changed to suit the fancy of the breeder."

The corn produced in the United States each year is worth more than a billion dollars—nearly twice as much as any other crop. There are over 96 millions of acres planted to corn each year. If the farmers could increase the average production one bushel per acre, the increase in value to them, at present market prices, would be nearly 50 million dollars; enough spending money to deserve our serious consideration.

All individual ears of corn of a given variety, and under identically the same treatment, will not produce the same yields per acre, certain ears running 25 per cent. or more above the general average and some as much below.

The ear row test is the only means we have of separating the low from the high yielding ears. Large ears of corn are either the result of heredity or specially favorable environment. Extra amounts of plant food, sunlight and moisture, due to thin stand, are responsible for a far greater number of large ears than heredity. In making the ear row test, many ears of little value may be eliminated if the ears to be used are selected from the ripening plants in the field, care being taken to select ears from uniform surroundings.

No one can tell by simply looking at two good ears of corn, which will produce the higher yield when planted. In fact, the better looking ears are often the poorest yielders. The purpose of the ear row test is to find the ears of corn that will yield the most under normal field conditions.

To make an ear row test not less than 25 ears should be used. The more ears used the more valuable the test. They should all be thoroughly tested for germination before planting time. A doubtful ear, or one that germinates poorly, will ruin or complicate the test to a great extent. It is not advisable to use ears all of the same type. The question as to which type of ear is the greatest producer is still unsettled. It may vary with different varieties of corn. If a photograph of each individual ear can be made, it will go a long way towards clearing up the type question.

Having endeavored to select good ears for the test, we look for a place to plant. Since our aim is not to secure unduly large yields, but to see how each ear would produce under uniform field conditions, we need not go out of our general corn field, provided we can find a plot where the conditions will be the same for each ear in the test. This is easier said than done; tile ditches, dead furrows, slope of land, previous manuring all tend to cause variations in soil conditions. It is impossible to find a location that does not possess some known and many unknown variations. To offset these variations a duplicate test row from each ear must be planted at some distance from the original. A comparison of results of these two rows from the same ear will generally show any marked variation in soil conditions that may have existed.

To make the ear row test we will assume 25 ears are to be used. Lay off twice the number of rows there are ears to be tested, not less than 50 hills long. Plant rows 1 and 26 from ear one, 2 and 27 from ear two, 3 and 28 from ear three, and so on, until rows 25 and 50 are planted from ear twenty-five.

The corn should be shelled, each ear in a separate sack, and carefully numbered. Plant five grains in each hill. This will take about half of each ear; the remainder is saved for future use or discarded, according to the performance of the grains planted. Thin the stand down to the requirements of the soil, but be sure to have the same number of plants in each row and uniformly distributed. The corn may be drilled, if so desired, the same care being taken to insure a uniform stand.

Cultivation in the test plot must be the same as in the general crop. If the test rows are in line with the regular corn rows so much the better, as they can be cultivated at the same time. When the corn is matured, cut and shock each row by itself. When all have cured thoroughly, husk and weigh the corn and fodder, keeping record of each row. Record blanks already prepared may be had for the asking from our experiment station at Wooster. The weights show us the highest yielding ears, and if we have been careful, we can reasonably assume they are the ears of greatest inherent value.

These ears may be perpetuated in either of two ways. We may select choice seed ears direct from the rows that produced the highest yields, subject more or less to pollination from lower yielding ears, or better, the original remnants may be crossed in a breeding plot. Either method gives us a strain from demonstrated high yielding seed, and ought to materially improve our corn crop.

"MODELS OF CHARACTER."

BY EDITH HOISINGTON.

[Paper read at the Farmers' Institute held at Amesville, December 9, 1907.]

The age still throbs with an eagerness for industrial wealth, but a greater time is coming, "the age of character." Already the unrest of the present century is quieted by its hope in the next.

It is written, "Whatsoever a man soweth that shall he also reap." "Sow a thought, reap an action; sow an action, reap a tendency; cultivate a tendency, reap a habit; cultivate a habit and reap a character." Each one of us is placed here for a definite purpose. To be able to accomplish this, one should cultivate and enrich his character the very best that he can. This can only be done by choosing the purest, highest and best models.

Character building is a slow process. It is not the work of a moment or a day; it must be worked at continually; and we are working even when we are not conscious of it.

Character is that something within which receives and impresses upon the mind and writes upon the heart with indelible letters our thoughts, words and deeds. Character is not something that is added to life, but is life itself. Character is what a man *is*, not what he *seems* to *be*.

We are often told of a man: "He is a man of such good character." How much more valuable this information seems to us than if we were told "he is wealthy or aristocratic." Of course a wealthy man may be a man of sterling character, but if we are to choose between the two, wealth and character, character comes first, always.

The death of Russell Sage, one of America's most careful and successful hoarders of money, emphasizes the shallowness of power or reputation based solely on the ownership of money.

The late William H. Vanderbilt, then the richest man in the world, built for himself a million dollar tomb, yet that tomb only calls attention to the futility of a life devoted solely to the accumulation of material wealth. How much more enduring is the monument erected to the memory of Jerry McAuley, of whom it was said, when he died "multitudes wept." Although no costly marble marks his last resting place, he saved souls, not dollars; he lived for his fellowmen, not for himself. The world quickly forgets its millionaires, while it ever honors the names of its humanitarians.

The nobility of character involves sympathy with all that is true and good. It is looking with displeasure upon all that is low or degrading and is in perfect harmony with that which is uplifting and pure. These feelings have inspired all who are among the grand characters of the world.

Different characters are like forest trees. Notice the grace, beauty and loveliness of some of the trees when the weather is calm or when gentle showers and balmy breezes play with their foliage, but when they are struck by wintry blasts and driving storms they bow, break and lie prostrate, never to rise again. But the great oak, with its roots deep seated in the earth, stands the storms of ages, and although some of its branches may be broken off, when the spring sunshine again smiles upon it, finds it putting forth new shoots and soon it is more beautiful than before and goes on gladdening the hearts of the weary traveler and furnishing shade and comfort to all who seek it. Great characters are not destroyed by the storms of adversity nor the advent of prosperity, but grow greater and grander by these.

If character were estimated by political preferment, Aaron Burr would rank as one of the first, but instead of that the few good qualities he did possess are powerless to save him from dishonor and are easily forgotten in disgust at his baseness.

In wonderful and striking contrast stands the character of our president, Theodore Roosevelt. Strong and upright, he wields with giant strength the arm that guides the nation's helm, and no one doubts his honesty and valor. He believes, as truly as he breathes, that the world is growing better, and is doing all in his power, and that power is mighty, to make it so. He has inspired the people all over the land to larger, broader life and thought.

We have the character of a noble woman in the life and reign of Queen Victoria. It is said of her that when at the age of twelve, she was informed that she was heir to the throne, she said in a very thoughtful way, "It is a solemn thing, but I will be good." During her reign of more than 50 years, she proved to the world that a woman can rule wisely and well in the nation as well as in the home. Her home duties, which could not have been small, as she was the mother of nine children, were not neglected, and she ever had at heart the well-being of every person in her kingdom. Vast improvement in education, morality and everything for the advancement and uplifting of her subjects were brought about by her. It is said of her that her personal character commanded not only loyalty, but love and reverence. Her heart beat for all that was high and noble; her sympathies were with all suffering; she ever discouraged all that was foul or cruel, and her death was mourned by all the world. Was it because she wore a crown of jewels? Was it because of rank or social distinction? No! It was her noble life—her exalted character.

A character that stands as a model to all who wish to follow the ideal is that of Helen Keller. Although the beautiful tints of the sunset and rainbow, all the loveliness of nature and art are forever hidden from her eyes, and although she never has heard the beautiful songs of birds nor the strains of music that delight and charm others, her face is always radiant with happiness, and her great delight is in making others happy. Many persons under such circumstances would have grown selfish and morose and would always expect to be ministered unto instead of diffusing happiness to others.

There are many noble characters in the common walks of life that are unknown to fame, whose names are but little known outside the community in which they live.

Such a character was that of the late Prof. Davidson, the Scottish-American writer and teacher. In a letter written to a class of laboring men in New York City, he said: "Creeds are nothing, life is everything. Know all you can, love all you can, do all you can—that is the whole duty of man. Cling with all your might to your own highest ideals and do not be led astray by the allurements of wealth, position or popularity. Be yourself- Cultivate character and your goodness will not be professional, but the simple, natural outcome of that character."

"Think truly and thy thought
Shall the world's famine feed;
Speak truly and thy word
Shall be a fruitful seed;
Live truly and thy life
Shall be a noble deed."

It must not be inferred from what has been said that wealth, talent and popular regard are not desirable, for indeed they are, and are of great service; but they are of secondary importance. Of the characters of whom we have spoken, was it easy and natural for them to be what they were? We are very sure to idolize our heroes and heroines and to forget that they were human like ourselves. The world is full of men and women of high endowments who fail because they lack the needful character.

The one golden character which rises above all others is that of the Savior of the world. His is the highest character the world has ever known. Every noble trait for which men and women should strive is found in Him.

The building of a strong, upright, symmetrical character is the duty of every individual. Every person should wear upon his brow the seal of honor; to *be* the best, to *do* the best, to *live* for the best.

The influence of such characters as these golden models will preserve and prosper the life of the nation until it shall become the grandest, most christian land in the world.

We should strive to exemplify in our own lives that which we most admire in others.

"Be what thou seemest, live thy creed,
Hold up to earth the torch divine;
Be what thou prayest to be made,
Let the great Master's steps be thine."

"SOME VIEWS ON DAIRYING."

MRS. H. J. CAHILL.

[Paper read at the Farmers' Institute held at York, December 13, 1907.]

The production and distribution of milk and milk products engage the attention of no small part of our population. The use of milk is not limited to any class or locality. It is regarded as a necessity by almost every family. In New York, Iowa, Pennsylvania, Wisconsin and neighboring states, dairying is carried on very extensively. It would be impossible to closely estimate the value of all property devoted to dairying, but it can be safely said that in gross investments it is exceeded by few branches of industry.

There is no business so exacting as the care of a dairy. Twice each day of the entire 365 the cows must be milked, and at regular hours. No matter how far the dairyman may be from home, he must hasten his return to get the milking done on time. Dairying, without much labor, is what every farmer would like, and it is hoped that this will be realized. The inventive genius of the world has turned the searchlight of investigation upon the needs of the farmer. While the power and capacity of man has been multiplied through inventions, yet have his tasks been multiplied by his facility and capacity to produce. He was not justified who predicted that the inventions of machinery to do man's work would starve him to death, for the opposite has resulted. There never was a time when there was such a demand for the work of men as in this day of marvelous inventions. In the dairy, inventors have found secrets whose agency and potency have been at work through the years, but which went uncontrolled because man did not know how to detect them. The modern dairyman no longer gropes in the dark, but starts out with a knowledge of what can be done with certain conditions. A thorough understanding of theory and practice will enable the dairyman to use intelligently and with satisfaction to himself, the various devices and utensils now available for his use.

The processes of dairying are now carried to completion by machinery or mechanical devices so that the old-time drudgery no longer prevails in the dairy. The separator, perhaps, stands prominent in value to the dairyman, since, by its use, he is able to secure a greater per cent. of profit by reducing the expense from hauling. He also has his skim milk to feed while warm with the animal heat and animal flavor. It is probable that skim milk so fed is worth more than in any other manner. Average milk contains 87 per cent. water, four pounds of fat, five pounds of milk sugar, 3.3 pounds of casein and albumen and .7 pounds of mineral matter or salts. After skimming and taking out the fat, a much greater per cent. of water remains, probably 92 to 95 per cent; that is, 100 pounds of skim milk contains about 95 pounds of water, so its feeding value when cold, and especially when sour, is not very great. Practically everything has been provided to lift the business of dairying out of the drudgery class and place it where it belongs among the skilled trades. There still remains the actual process of milking, but that is fast coming under the control of the inventor.

While no milking machine yet invented has shown its practical value in a way that has led to its general adoption, it is doubtless the wish of every farmer that the inventor may perfect the milking machine and make it practicable for the small dairy. At the present time, the best substitute seems to be a low-voiced man, who unites firmness with gentleness and who uses the milking stool only to sit upon. Farmers everywhere are beginning to take notice of matters about which they would have disdained to concern themselves some years ago. All over the country there are men with their hands behind their ears, listening to that siren voice which sings of constantly increasing prices and unsatisfied demand for dairy products.

In times past the triviality of milk and butter was left to the woman of the farm whose supply of pin money was kept up by the dairy products. But a change has come, and the dairy is no longer of little importance. The insistent demand for more and better butter; not only that, but cities have issued the call for pure milk and cream, and back up the call with open pocketbooks. The development and growth of supplying cities with milk and cream is a great subject, as comprehensive as the country and as important and extensive as any other branch of business. Every center of population in the country has this question of milk and cream supply to solve for itself. Some have settled it with satisfaction; others are still driven to further exertions by the constantly growing demands which never end. The demand for better quality should be a cheerful note to every farmer, for it indicates that honest effort to improve will be appreciated. It should spur every dairyman to place a premium on cleanliness, for such efforts do not go unheeded nor unrewarded. As people are becoming more prosperous, they demand better quality in all things they use. So it is that prices for milk, cream and butter are advancing and there is more money in the business for the producer. There are many questions which will interest the dairyman. They relate to dairy supplies, equipments and food problems.

The producing elements must be studied with care, for they bear a part to modern successful and profitable farm dairying. These matters are not exclusively for the dairyman, but for the farmer who undertakes to produce the best milk and cream. He must have an understanding of these questions and know how to solve them. It is not necessary for a cow to give only a small quantity of milk that the milk may be rich. A very high test invariably goes with a small yield. The cow that holds the world's butter record for one day, seven days, thirty days and sixty days, tests 4.32, while thousands of cows that test more produce less than half as much butter. To combine in one dairy cow a great yield with a high test is the problem that confronts the producers. The ability of a breed of cattle to produce must determine the usefulness of that breed. Every farmer should make it a point to know the characteristics of the different breeds of cattle. There are five or possibly six distinctive dairy breeds. It behooves the farmer to select that branch of dairying which he proposes to follow and then select his cattle accordingly. "Gilt edge" butter is not entirely due to the excellence of the cow, but to the intelligence and management of the farmer who attends and looks after all the details necessary to produce a superior article.

Regarding the Babcock test, I wish to say that I believe in its efficiency as used in agricultural colleges, experiment stations, etc., but from the fact that the average farmer knows so little about this test has probably caused its use to be abused.

Ought we not post ourselves upon the subjects and use the same business methods in dairying as in other branches of farming? We, as farmers, may well congratulate ourselves that a great condensery has located in our midst, which will pay a large advance over present prices and eliminate at least a part of the features which have been unprofitable to the producer.

"IMPROVING THE SOIL."

BY SENECA B. BOWLES.

[Read at the Farmers' Institute held at Harrison, Hamilton county, December 31, 1907.]

Mr. President, Ladies and Gentlemen:—Why farm the skeleton of a soil? What is the skeleton of a soil? The answer, according to our best authorities, is when the soil is depleted or devoid of all humus, organic material or vegetable matter, and nothing remains but the clay and sand. This is the structure or skeleton of a soil.

In many sections the system of commercialism is followed. The proximity to large cities facilitates the ready marketing of products and encourages the practice, even in some more remote districts. All products in the form of provender are freighted to the cities, going there as raw material instead of a *finished* product, and I might add, selling a cash commodity direct from the soil is like changing money from one pocket to the other, even worse, for you are out both the labor and fertility to grow it. If we burn a stack of straw or any dry material, the small pile of ashes contains all the plant got from the soil, except the nitrogen, and that the soil originally got from the air, so when we burn any of this organic material, our most valuable element of fertility for plant growth goes up in smoke and the ash elements go back to the soil. Leaching away of soluble particles from barn yards and feed lots, *lack* of clover growing, underdraining and a good rotation; these are some of the causes that bring about, sooner or later, a depleted or dead soil.

The question is: Why farm the skeleton of a soil? Judging from a financial standpoint, there is little, if any, profit in the business, regardless of the elements, persistency of the farmer, etc. The present scarcity of competent help only makes matters the more discouraging; the poor physical condition of the soil and slow growth of cultivated crops tend to force him to quit the occupation and seek some other means of livelihood.

Taking it for granted that the farmer is confronted with these seemingly insurmountable difficulties and not disposed to abandon the farm or his occupation, he seeks with a determination some formula for the solution of the problem, realizing this state of affairs and with an ambition to redeem this skeleton or depleted soil to a live soil, highly productive, filled with humus where vegetable bacteria and earth worms revel and leguminous crops grow luxuriantly. There is no system of farming superior to animal husbandry.

It is immaterial what kind of live stock is kept, it may be any of the domestic animals, but the feeding of beef cattle or dairy cows has the preference, according to the best authorities on the subject, for the redemption of worn out land. Growing clover and alfalfa is an all important adjunct to growing live stock; young animals need little else, perhaps some grain as a supplementary feed, but they need this protein or muscle-making food surely, and most soils need it just as badly, and the gist of this article is the careful saving and the proper application of the manure made from feeding the above named crops.

One of the best methods for saving manure is the construction of cement stable floors for all stock. It is hardly necessary to go into a detailed explanation of putting in these floors, as in nearly all communities there is some one capable of doing the work, or at least will offer the desired information.

Upon these floors there can be no waste of either liquid or solid manure, and as the liquid is the most valuable part, it is very important that none leach away. The use of an abundance of litter or bedding to absorb this liquid is an item of importance not to be overlooked. The comfort and cleanliness to the stock and sanitation also demand it.

Now, after these precautions to save this valuable element of fertility, it would seem absurd to toss it out of the stable window, perhaps under the eaves, to be leached of its most soluble particles, yet this last named practice is what many Ohio farmers are following today.

Tests at one of the experiment farms with horse manure, exposed to the weather for six months, showed a loss of one-third of the nitrogen, one-sixth of the phosphoric acid and one-third of the potash, while a corresponding sample that was protected from the weather, lost only one-fifth of its nitrogen and none of its phosphoric acid or potash.

It is only necessary to state here that all of those experiments show great losses in the valuable constituents of the manure from exposure to the elements, the decrease in value amounting to from 30 to 70 per cent. for periods of three to twelve months. During heavy rains, especially in warm weather, the losses will be much greater than in dry or cold weather. The relative decrease in value is larger for manures produced from rations of high nutritive values. In other words, the more valuable the manure, the greater will be the per cent. of loss from leaching. It is conservative to say that manure exposed six months loses half its value. It is not the liquid excrement alone that is wasted away by the rains, for the solid excrement contains a certain amount of soluble plant food which is removed by leaching. In addition to this, there are chemical changes taking place in the manure which are converting some of the constituents, which were originally insoluble, into forms that are soluble in water, and these may be carried away by the rain. Anyone with a reasonable degree of intelligence and experience on this subject can readily see the practice should be abandoned immediately.

Prof. Vivian, in his work on the principles of manuring, says: "Manure is never so valuable as when perfectly fresh. The very best methods of handling and care, if the manure is stored, cannot prevent more or less loss of the valuable constituents. For this reason, it is advisable, where possible, to apply the manure to the soil as fast as it is made."

In many places it is drawn direct from the stable to the cultivated fields. In the growing season it can be put on the permanent pasture, and no place will it pay better dividends than right here. How shall we apply this manure? With a spreader by all means. When a machine will do as much or more work than a man, and at the same time do it as well or better, it is a profitable investment, if the machine is sold at a reasonable price. In the case of the manure spreader it will save the work of two men; as for the quality of the work done, there is absolutely no comparison. By the old method, the manure went in lumps and bunches, with the result that some plants received an excess of fertilizer while others none. By the use of the spreader that is properly constructed, all the hard chunks are held in contact with the beater until they are thoroughly pulverized before being spread, and the machine scatters and spreads the manure so thoroughly that a particle of manure is placed in contact with every particle of the soil. In other words, the whole field is covered like a blanket and spread as thin or thick as desired.

Manure is probably as valuable on account of the effect on the mechanical condition of the soil as for the plant food it contains. As a humus former it has no equal among fertilizers, and the great value of humus in improving the tilth of the soil and increasing its power to hold water has not been overlooked by any close observer. A farmer would be well repaid for applying especially stall manure for its physical action alone, although it contained none of the elements of plant food.

This superior mechanical and physical condition of the soil is produced principally by nitrification, and the more humus and organic matter incorporated and mixed in the soil so much more is it conducive to the vegetable bacteria which carry on the process of nitrification. They require a living soil, not a dead soil. Their work is to break down this organic matter, change the ammonia into nitrites and then into nitrates, which last is the form in which green plants can use it.

After following the above methods for raising the soil to a seemingly high state of fertility it may be far from a well balanced soil. Clover growing enriches the soil in nitrogen, but is a greedy consumer of lime, potash and phosphoric acid. If the crop is entirely removed from the land and no manure returned, the soil becomes deficient in these three elements, but richer in in its nitrogen content. Selling off some of the cereals and returning the stalk and straw, after being leached of its soluble parts, may have a like effect. Again we lose the phosphorus carried away in bone, flesh and milk. Let us remember that a balanced ration is just as important for corn as for cattle and that phosphorus is required largely for the grain. It is impossible to give any fixed rules which will cover all cases and enable a farmer to tell, without any experiment on his part, what food constituent his soil lacks. In a general way the crops themselves may give some valuable suggestions. As a rule, lack of nitrogen is indicated when plants are pale green or when there is small growth of leaf or stalk, other conditions being favorable. For example, the boy said he planted large white corn, but it came up little, yellow. This surely indicates a lack of nitrogen. A bright, deep green color, with a vigorous growth of leaf or stalk is, in case of most crops, a sign that nitrogen is not lacking, but does not necessarily indicate that more nitrogen could not be used to advantage. Excessive growth of leaf or stalk, accompanied by an imperfect bud, flower and fruit development, indicates too much nitrogen for the potash and phosphoric acid present. For example, a wheat crop with a heavy growth of straw that lodges badly, and a shriveled grain, weighing about 55 pounds to the bushel, indicates too much nitrogen for the phosphoric acid and potash. When a soil produces good early maturing crops of grain, with plump, heavy kernels, phosphoric acid will not generally be found deficient in the soil. Sixty-two pound wheat emphasizes the fact.

Commercial fertilizers should be used as a supplement to, and not as a substitute for, manure. Such general indications may often be most helpful and crops should be studied carefully with these facts in mind. Now, if we follow this general synopsis, we can redeem a dead, worn-out, skeleton of a soil to a well-balanced, profitable and productive soil. Secretary Wilson, in a recent address at Syracuse, N. Y., says: "The nation is interested in the soil and its crops. Shall we meet the demand for more cotton, or shall it be grown in the valleys of the Nile and the Congo? The soil will answer. Shall we grow wheat for our increasing population, or shall we import from Canada?

Soil conditions will determine. Is meat to be found on the tables of our working people in the future, or will the price be beyond their reach? Ask the question of the soil."

Considering the location, bear in mind that the producing capacity fixes the price we can pay for land. It fixes the price we can afford to pay for hired help; for improvements; for beautifying the home and surroundings; for the education of our children, etc. And furthermore, let not the old adage be forgotten: "Example is better than precept." I hope I have mentioned some of the fundamental facts why, when it is within our power, we can farm a full well-balanced soil, instead of the skeleton of a soil.

"GROWING POTATOES."

BY W. H. UNCAPHER.

[Read at the Farmers' Institute held at Agosta, Marion county, January 4, 1908.]

Among the most important requirements for producing a profitable crop of potatoes, I would name the following: soil, drainage, equipment, seed, cultivation and nearness to a good market. First, the soil should be a sandy loam, underlaid with a loose, porous subsoil. The loose, black land which produces such big crops of corn throughout this country cannot be depended upon for potatoes; it absorbs too much heat from the sun, and causes the vines to blight in times of drouth.

Next, the drainage. Unless the soil is underlaid with gravel, we must have it drained thoroughly; even where we have had the tile three or four rods apart, we have suffered some loss during the last two or three years. At no time during their growth will they stand being covered with water longer than a few hours. We like to begin breaking the ground for potatoes as early in the spring as possible. If it is frozen after it is plowed, it will destroy a good many grubs and insects and also help to get a finer seed bed. The depth of plowing should be about the same as for corn—six or seven inches—and there should be some humus to turn under, such as clover or manure. The manure should be applied with a spreader and put on very thin, or it will cause the tubers to be scabby.

Use a rolling cutter on the plow, because it will not drag the trash in bunches. We do not like the jointer, because it leaves all trash in the bottom of the furrow and thus breaks the capillary attraction in the soil. In preparing the seed bed we first use the spring tooth harrow, which thoroughly mixes the soil three or four inches deep, and brings the clods, if any, to the top, where they can be mashed with the drag or drag harrow.

It is very important to have a good, fine seed bed; it will make cultivation a great deal easier during the entire season. The best time to plant, for us, is the latter part of April. We have tried June planting several times, and in every trial they have failed to yield as much as the early planting.

Now we are ready for the seed, which, to be first class, should be solid, not sprouted. The care of the seed should begin in the fall. If they are buried, which is really the best, they should be covered as follows: First, a heavy coat of straw, then a light coat of earth, then another medium coat of straw and a heavy coat of earth. While the pit is frozen solid in the winter it should be covered about two feet deep with straw or clover chaff; this will hold the frost and keep the seed from sprouting until you are ready to plant.

If the seed is kept in the cellar, when the warm days come in the spring, the cellar should be kept closed during the day and open during cool nights. Most cellars are kept entirely too warm for the good of seed potatoes. The temperature should be below 40 degrees, if possible. The seed should be pure and saved from a good thrifty crop. It is not necessarily the large seed potatoes which produce the best crop. For the past few years we have been using small potatoes from 1 1-2 to 2 inches in diameter, and planting them whole. This will not work with some varieties.

The Rural New Yorker and Carmine No. 3, when planted whole, will send forth but one or two sprouts from the seed end, the other eyes lying dormant; while other varieties, such as the Seneca Beauty, will send forth large numbers of sprouts, and none of them strong. These cannot be planted whole.

The advantage of planting whole potatoes lies in their resistance to rot when not cut with the knife. Some people claim that the seed will soon run out or deteriorate under this treatment, but experience does not prove this. One experiment station has tested it for three years, and at the end of that time the whole seed seemed to have the best record of the two. When medium or large tubers are used for seed, we usually leave about two eyes to the piece, but a certain number of eyes is not as important as having the pieces thick and of even size.

After potatoes are cut, ready to plant, if not planted immediately, they should be scattered thin on a floor or placed in crates where the air can circulate around them freely, because they heat easily, which spoils their germinating power. As a preventative for scab, we have been using the flour of sulphur. After the potatoes are cut ready to plant, we sift it on and stir them up, in order to get them well coated. Be careful not to get any in your eyes, or you will not see any too good for the next few hours.

We use a two-horse planter, which takes one row at a time, and does the work as well, if not better, than can be done by hand. One advantage it has over hand planting, it places the seed nice and straight, thus allowing much closer cultivation. The pieces are dropped about 12 inches apart in the rows and the rows are three feet apart. Most people make the mistake of getting their seed too thin on the ground. This allows the sun to strike the ground in July and August, and the consequence is a large waste of moisture.

We have been using commercial fertilizer the last two years, and so far, it seems to be a good investment. It was applied with the planter, which scattered it well in the ground about two inches above the seed. The amount used was 400 pounds per acre, containing 10 to 12 per cent. of phosphoric acid and 5 to 7 per cent. of potash. No ammonia was used, as that was supplied in the clover and manure. Cultivation should begin soon after planting. For the first time or two we use the slant tooth harrow, which can be slanted if the plants are near the surface. As soon as they are up, so that we can see the rows, we take the two horse cultivator, fitted with four shovels or spring teeth on a side, and cultivate as close as possible without disturbing the plants. Leave the guard off; if part of them are covered up it does not matter, for immediately behind follows the weeder, which uncovers them all and thoroughly works the soil around them. By running two cultivators and one weeder we keep even and no plants are left covered up. They *can* be worked in this manner if a very small per cent. of the plants are up; just enough to enable one to tell where the rows are. This process will loosen the soil and the remainder will come up.

We follow the cultivators with the weeder until the plants are six or eight inches high. From the time the seed is first put in the ground until the vines fall and cover the middles, we aim to keep a mulch of loose earth. This can be accomplished by cultivating after each heavy rain. Neglecting to break the crust after a heavy rain may mean the loss of tons of water in a few days.

The Colorado beetle has been causing potato growers a great deal of trouble for the last few years. We have found that the only successful way to cope with them is by spraying, and while spraying for the beetle we also spray for blight with very little additional cost .

The following mixture has given us the best results: Copper sulphate, or bluestone, four pounds; lime, six to eight pounds, and one and one-half pounds of Paris green. This is the Bordeaux mixture with some extra lime and Paris green added. The equipment necessary to apply this will cost about $20, and consists of a good brass lined force pump, hose and nozzle for two rows, and a barrel for the mixture. This should be mounted on trucks which will pass between the rows.

Of course, the time to spray for the beetle is when they appear in sufficient numbers to injure the plants; but for the blight, the first spraying should be when the plants are six or eight inches high, and should be repeated every ten days or two weeks as long as you can get between the rows without injuring the vines.

The cost of this mixture is about 80 cents per barrel for the chemicals, and it should cover two acres. Counting on three applications, then the cost would be about $1.20 per acre, outside of the labor. We believe spraying pays, whether the bugs are bad or not, for it certainly prevents a great deal of blight and also kills fleas and other insects which work on the vines.

But Paris green nor any other poison that we have been able to find, will kill the long, striped beetle. The only way we have been able to manage them is to drive them out or scatter them, so that they do not eat the vines too close.

The following equipment is necessary where there are several acres to be harvested: Four horses, an elevator digger, 100 to 150 one-bushel crates and two wagons with flat bottom racks. With this equipment and present prices of labor, potatoes which will yield 100 or more bushels per acre can be harvested for less than five cents per bushel, while with plow and basket it will cost nearly twice as much.

The tubers should never be put in the cellar or buried immediately after digging, but should be put in a dark, well ventilated barn or placed in ricks and covered with straw and fodder where they can cure and dry. Before putting in the cellar or hauling to market, they are scooped in the sorter, which knocks off the loose dirt and sorts out those too small for market. Of the many labor saving tools for handling potatoes, the sorter is the best of all for the money invested; sometimes returning the money in a single day.

The marketing of two or three thousand bushels of potatoes is a very difficult proposition, because they are heavy and so easily injured by frost if not moved early in the fall. No ironclad rule can be laid, but it seems best to sell part of the crop at least in the fall while the roads are good. Many people put in their winter's supply at that time, and they can be sold in larger lots and then there is no shrinkage.

In conclusion I would say for the small farmer who has the right kind of land, well drained, there is money in growing potatoes.

"MENTAL CULTURE ON THE FARM."

MRS. B. B. HALL.

[Paper read before the East Townsend Farmers' Institute held at East Townsend, O., February 1, 1908.]

The word mental, like most other words in our language, has various meanings. In this paper it refers to the whole mind; to all the activities of the intellect, the sensibilities and the will.

It is of special importance that man, while he may do his part in the world's work by manual labor, should give that time and activity to his mental powers that will lift him out of the position of a physical drudge and make him a specimen of complete manhood, with all his powers trained to a skillful, pleasurable activity.

It used to be thought that the brightest boys in the farmer's family should be helped into other business, while the one with least mental vigor should be kept on the farm to take up the work as his father laid it down; but today the farmer's business calls upon him for a breadth of knowledge and a skill in its use which are seldom demanded of one in the narrower spheres of most other kinds of labor.

In these times of dealing with glaciated soils, terminal moraines, clays, sands and loams, with animal parasites, external and internal; with Hessian flies, chinch bugs, clover weevils, potato beetles, codling moths, scabs, smuts and blights; with dips, sprays, emulsions, powders, arsenites, kerosenites, fungicides, germicides, acids and alkalis; with fertilizers and their values; with proteins, carbohydrates, maintenance rations, milk rations, fattening rations, growth rations and their various combinations; with pan setting of milk, deep setting, dilution separators, non-dilution separators, centrifugal separators; with temperatures for ripening cream, temperatures for churning, and the difficulties of making butter from cows long in lactation on dry feed—if, in dealing with these questions, the farmer is a geologist, entomologist, botanist, bacteriologist, chemist, physicist, veterinarian and trained nurse, he has abundant opportunities for the use of his knowledge in the solution of the problems that are continually arising on the farm. He can profitably employ an education on these practical points, which is fully equal in intellectual training to that given in the old colleges through the medium of Greek, Latin and the higher mathematics; a mental training fully equal to that with which Daniel Webster took his degree and entered on his great career.

How many problems arise at the very outset of the business in regard to the stock he shall raise and the purposes for which he shall raise it? For example, shall he keep a dairy breed of cattle, a beef breed or a general purpose breed? If he decides for the first, shall it be the Jersey, the Holstein, the Guernsey or the Ayrshire? If he decides for the second, shall he breed the Shorthorn, the Hereford or the Polled Angus? If he wants general purpose cattle, will he secure the Devon, the Red Polled or native stock? Or if he depends upon cross breeds, which breeds shall be crossed and in which way?

When these questions have been decided and his foundation herd secured, how many other questions of equal importance come trooping after that require as careful study and as wise judgment for their successful answering? Suppose we cite a few of them. Shall the calves be disposed of soon after birth; be made into veal, into baby beef or mature beef? Shall they be allowed to suckle or be fed whole milk, skim milk or hay tea? Shall he raise animals for the breeder, for the feeder, or shall he fatten them himself, or shall he fatten those raised by others? At what age shall he sell? Shall he fatten on grass or, during the winter, on dry feed? If he decides upon the latter, shall he depend wholly on the feeds he raises or shall he purchase some? How shall he combine feeds so as to furnish the proper amount of protein and carbohydrates to each class of animals to produce the result he desires and do it economically? Many other such questions he needs to answer before his finished product has been turned into money.

He needs to solve a similar set of problems in regard to each kind of stock he keeps. Another set of considerations of equal difficulty and importance lie about the grains, grasses and weeds he shall raise.

What manufacturer, railroad manager, merchant, minister, doctor, lawyer, judge or editor deals with problems greater in number or difficulty or requiring a greater amount of knowledge or better trained faculties for their solution than these with which each farmer deals?

How many dwellers in country and town consider country life a humdrum existence because those who live there are not continually in contact with a crowd of their fellows, and shut their eyes to the many opportunities of rural life for the highest development of intellect and heart, and for that growth and training of the moral nature that will produce the best character of which the individual is capable.

If the farmer, when he stops a moment on a sweltering day to rest or let his team rest, will pull a stalk of grass or a weed and study it carefully, root, stem, leaves, head, flower and fruit, and continue the practice, occasionally consulting his botany or dictionary for information, but depending principally on his own observations, he will soon have a familiar acquaintance with the vegetation of his fields which will add greatly to his interest in his work, and will be of much practical advantage. While doing this his thoughts have been drawn away from the discomforts he is enduring to a pleasanter subject; his power of observation has been increased. He will learn the characters of the valuable grasses and the situations for which each is best fitted; timothy, red top, orchard grass, Kentucky bluegrass, perhaps Canadian bluegrass and the various clovers will become well-known acquaintances and he will gain a greater good from them in consequence. He will learn that many weeds have much grazing and feeding value, and will seek to utilize them to the greatest degree. Bermuda grass, which we would consider a great nuisance in our fields, has taken possession of many worn-out cotton fields in the South and is welcomed as a Godsend by the people there.

How often the Master Teacher taught his disciples spiritual lessons through vegetable growth, and we should learn to draw from it lessons for ourselves. "First the blade, then the ear, after that the full corn in the ear" enunciates the great law of patience which we should practice with ourselves and our fellowmen. As we observe how patient nature is amidst her difficulties, it should give force to the words:

"Plant patience in the garden of thy soul;
    The roots are bitter, but the fruits are sweet;
    And when at last, it stands a tree complete,
    Beneath its tender shade the burning heat
And burden of the day shall lose control.
Plant patience in the garden of thy soul."

But every good farmer knows of how little value planting is unless it is followed by culture, and he should give abundant culture to the good qualities in the garden of his soul.

The good farmer will study the dispositions of his stock, their likes and dislikes, their pleasures and their sorrows, and will do all that he reasonably can for their comfort and satisfaction. He will do this, not merely because the results will increase the contents of his purse, but because of his delight in their pleasure and of his sympathy with their troubles, and he will grow in kindliness of heart thereby and become a better friend and neighbor. One of the drawbacks to the pleasures of farm life is the sadness of necessary partings with our animal friends that we have fed and petted, whose pranks we have enjoyed and whose sorrows we have alleviated. While cows grow lean from homesickness and horses and dogs die from the same cause, their love for us is not to be despised, nor that which we give to them without its value to us. By our experiences we learn to sympathize with the New England maiden who told how her milk-white heifer had been taken to replenish the family beef barrel, and said:

"Do you blame me for crying
When my Zephyr was dying?
I shut my room and my ears,
And opened my heart and my tears
And wept for the half of a day.
And I could not go
To the rooms below
Till the butcher went away."

The country dweller can gain much enjoyment and valuable culture by a sympathetic observation of the wild animal life about him, small though it be. It was this very culture of heart that enabled Robert Burns to write those two immortal poems to the mouse and to the daisy, when he had destroyed the nest of the mouse and the daisy itself by turning them down with his plow.

The birds are the glory of the wild life about us. The non-observer will tell you our birds all leave us in the winter, but the observer sees and hears chickadees, juncos, nuthatches, hairy and ladder-backed woodpeckers, flickers, quail, turtle doves, cardinal grosbeaks, meadow larks, crows, hawks, owls, song sparrows, goldfinches, bluejays and shore larks and ponders upon their ways as they battle with the cold, the storms and the scarcity of winter.

Spring and summer are the most important times for bird study—the location and structure of their nests, time of nesting, care of their young, kinds of food, habits of flight, traits like those of human beings, beauties of form and color, and above all else, their delightful songs, which afford endless entertainment and profitable thought to him who will devote a little time to observing them.

Let us go out on my porch on a fine morning in the middle of May and listen. The robin carols gaily to his mate that is sitting in the cedar tree by the roadside, the Baltimore oriole, in his brilliant new suit of orange and black, whose wonderful home swings securely from maple twigs just at the left corner of the porch, pours forth his optimism in the oft-repeated "It is unequaled here, here; it is unequaled here, here, see?" From the south side of the big maple on the right hand, hangs a still more delicate structure, and the male proprietor from some nearby point expresses his gladness in the exquisite song of the warbling vireo. That gay dandy, the goldfinch, gathers dandelion seeds from the front lawn without asking leave, and while a pair of tiny, chipping sparrows come searching for their breakfast almost to our feet, farther away we hear a long, cheerful trill from the bridegroom of another pair. From the fence across the road the song sparrow tells in dulcet tones of the life that's soon to be in the lowly home just beyond; while at his side, in dress of similar color and fashion, with notes scarcely distinguishable from the other, the vesper sparrow sings of the nest close to the cattle path in the pasture. In the north yard the gaudily dressed red-head every now and then leaves the deep hole he is pecking in the maple stub with fierce wing and voice, to drive away a persistent rival. In the elm that overhangs the path to the barn, the bluejay chuckles good-naturedly (doesn't he laugh?), or, with strident voice, scolds the real or fancied intruder. Just beyond, the bobolink, as he wings his way to his favorite perch on the topmost twig of the walnut tree, scatters down a shower of inimitable and untranslatable melody. From the locust tree by the road gate, the catbird gurgles and chatters and sings and chokes, while he complains that the nearby thicket of sprouts the renters had left to grow, and in which had been his home, has been cut away and he is compelled to seek the loneliness of the forest to find a suitable building spot. From the orchard sounds the "kuh, kuh, kuh" of the cuckoo, the mellow notes of the turtle dove, and a plaintive "pee-ah-wee" comes from a dead limb, between the frequent meals of the flycatcher; the courageous king bird furiously chases the thieving sparrow hawk into the dense foliage of the pear tree for a refuge; the bloodthirsty plover swings by in awkward flight, shouting his gory cry of "kill deer, kill deer." Up from the north meadow, our northern mockingbird, the brown thrasher, sends his strong, clear, melodious whistle and song to join in the concert; some curious crows, out on a foraging expedition, rudely demand the "caws" of all this ectasy; while the hen hawk sends his piercing scream of applause down from the empyrean regions where he floats, to express his ardent approval.

Haven't you heard enough yet? Step around the corner of the house and hark toward the woods. "Whoit, whoit, whoit, whoit, whoitten, whoitten, whoit ten, ten, ten, tu, tu, tu" is perhaps a faint imitation of the joyous whistle with which the cardinal grosbeak, the most brilliantly colored of our songsters, makes the woods and surrounding fields ring. You may also be fortunate enough to hear that rival of his, both in beauty and song, the scarlet tanager, as he, too, darts like a living flame through the dark green foliage, and wakes the echoes with his gladness. Then, too, you will hear—but no—there's the breakfast bell, and we haven't time to hear any more now.

Country music! Wonderful! Beautiful! If we only listen to it. If one cannot have all kinds of music, it is better than Thomas' orchestra or Sousa's band or Paderewski or Kubelik or Kocian or Calve or Patti in city surroundings.

Many are the profitable lessons we may learn from our feathered friends, but I can halt only long enough to give you the titles of two. Shelley, in apostrophizing the English skylark, says:

"We look before and after,
And pine for what is not;
Our sincerest laughter
With some pain is fraught;
Our sweetest songs are those that tell
Of saddest thought.

"Yet if we could scorn
Hate and pride and fear;
If we were things born

Not to shed a tear,
I know not how thy joy we ever
Should come near."

Christ says: "Behold the birds! Your Heavenly Father feedeth them," but did you ever notice how they have to hustle to get that food for themselves and their families? Go thou and do likewise.

What attention should the farmer give to reading, that great fountain of human culture? He must read a great deal about his business in papers, bulletins and books or know far less about it than he ought to know. But what opportunity has he to become familiar with the best thoughts of men of all ages? With the many things calling for his attention, how can he find the time?

In no field of activity is the old proverb, "Many a little makes a mickle," better illustrated than in the accumulation of mental treasures. Let the boy begin early and continue to use in this direction the fragments of time that are often wasted or worse than wasted, and manhood will find him far on the road to intellectual wealth.

Let's make an estimate. It will not be too much if we reserve for this purpose one hour each evening and five evenings per week, during the longest winter evenings. One hour is about the right time for reading, carefully, twenty ordinary 12 mo. pages; this makes one hundred pages a week and sixteen hundred pages during the four months with longest evenings. This equals three large 12 mo. books in a year, and thirty in ten years. Much of this will have been done in youth, if reading has been properly directed, but beginning at twenty and following this plan, at fifty one will have read ninety such books.

What a library! What culture of the intellect, the emotions, the character! What delightful memories stored up to occupy one's thoughts during the evening of life. What familiarity will have been gained with the exact sciences, the best history, the finest poetry, the greatest novels, the sweetest love stories, the most beautiful descriptions, the most perfect essays, the gayest humor, the deepest pathos. What a list of friends the reader has made: Tyndall, Faraday, Prescott, Parkman, Motley, Green, Gibbon, Shakespeare, Milton, Byron, Burns, Moore, Longfellow, Whittier, Bryant, Holmes, Tolstoi, Hugo, Scott, Dickens, Thackery, George Eliot, Blackmore, Macaulay, Carlyle, Emerson, Matthew Arnold, Holland, George McDonald, Ralph Connor and many others whom he loves, because they have aroused into a larger activity the best that is in him, awakened into life sources of enjoyment that had been dormant before, and, by increasing his love of "the true, the beautiful and the good," have led him away from the false, the deformed and the evil.

How it increases one's pleasure, as he sits by the cozy fireside and listens to the whirling snowstorm without, to read Whittier's exquisite picture of a great New England snowstorm, and the home life in the plain farm house in which he was born; or Blackmore's tale of the terrible storm of snow and cold that fell upon England in the winter of 1689-90, and the herculean efforts of the huge Jan Ridd in rescuing his flock of sheep from the drift in which they lay; or to take up Hugo's "The Man Who Laughs," and read his description of the same storm and its effects upon a boatload of wanderers in the English Channel. Some might prefer to take these to keep them cool in a longer nooning than usual, when the mercury is away up in the nineties on a broiling harvest day.

Our appreciation of a fine sunrise or sunet is enhanced by thinking of Ruth's dream:

"I've dreamed of sunsets, when the sun supine,
Lay rocking on the ocean like a god,
And threw his weary arms far up the sky,
And, with vermilion tinted fingers,
Toyed with the long tresses of the evening star."

When a wild thunderstorm breaks upon us in its fury, Bryant says in our hearing:

"Oh, God! when thou dost scare the world with tempests,
Set on fire the heavens with falling thunderbolts,"

and Byron helps us in the enjoyment of it, thus:

"And this is in the night. Most glorious night!
Thou wert not sent for slumber! Let me be
A sharer in thy fierce and far delight—
A portion of the tempest and of thee!"

But we must not forget the Book of Books that lies at the foundation of our literature. Its daily reading, the weekly attendance upon the preaching of its truths, its social study in the Sunday schools, bring one under the influences of grand history, magnificent poetry, the noblest biography, and, above all else, under the influence of the meek and lowly Nazarene, whose teachings are the source of all that is best in humanity, of all that highest among the nations of the earth.

"Up the broad stairs that value rears
Stand motives beck'ning earthward,
To summon men to nobler spheres,
And lead them worthward."

"BETTER LIGHTS IN OUR COUNTRY HOMES

BY ORA BUE.

[Paper read at the Farmers' Institute held at Deshler, February 7, 1908.]

Now as to having better lights in our country homes. They can be had with little more expense than the kerosene light. How much better and easier it is to have those which do not require the labor of cleaning globes, trimming wicks and filling the lamps nearly every day. Then, too, it is so dangerous to have lamps where there are children. They are likely to be dropped while being carried, and often have been thrown over or off a table and thus causing an explosion.

There are thousands of parents today—devoted parents, too—who, by their thoughtlessness in lighting their homes, are ruining their own eyesight and that of their children. It is surely time for some of the representative families —the real thinkers of our country—to give such an important subject their attention.

It is undoubtedly of interest to many to learn the "how" of some better way of lighting our country homes. Why not try to have them as brilliantly illuminated as some of the dwelling houses in the city? We cannot have electric lights nor natural gas, so why not have the gasoline light or one which I think is still better, the acetylene.

The kerosene lights are claimed to be hard on the eyes and then they do not give such a clear, bright light as some other kinds. They are not so bad for young people, who have good eyesight, but the older people, whose eyes compel them to wear glasses, need a better light than the old tallow candle or the kerosene lamp.

A few years ago my parents' eyesight began to fail, so they couldn't do much reading, writing or sewing after night, so they thought best to get some lighting plant installed, and I must say that they think they have new eyes once more. I have never had any experience with any but the electric, kerosene and the acetylene lights, and from my experience I think that there is just about as much difference between the kerosene and acetylene as between day and night.

We have played croquet on the lawn several evenings by lighting our porch light. Do you think we could have seen how to play had we just hung a lantern on the porch? No, indeed, for we have tried it. We have had our lighting plant in our house twenty-eight months now, and the only work it requires is recharging it every two or three weeks, which takes about ten minutes, and about the same length of time to clean the pans, which any little child can do. We have an electric battery which we use to do the lighting. I think they are claimed to be good for lighting two thousand times.

Our grandfathers knew nothing better than the old tallow candle. When coal oil was first used for lighting it was considered wonderful, but, like the old tallow candle, the coal oil lamp is practically a thing of the past.

Gasoline lamps and gasoline lighting plants, with their expensive mantels and globes which are continually breaking, are being replaced by this wonderful acetylene. In addition to being free from the unnecessary expenses, acetylene is also free from the smoke and unhealthy odor that universally accompany coal oil and gasoline. Now you can have globes on the acetylene if you care to, or you may not, for they burn just as well without. Some think they look better with the globes. We have globes on the most of ours, but took them off some of the lights, for we thought they gave a little better light without.

It is nearly a daily incident to read of fire and explosions caused by gas and gasoline. How often do you hear of an acetylene explosion? At a cost of two-fifths of a cent per hour for each twenty-four candle-power burner you may have the most brilliant, and at the same time the easiest light on the eyes known. Good authorities state that acetylene gaslight is cheaper, when once installed, than city gaslight, with gas at one dollar per thousand feet; electricity, at three-quarters of a cent per sixteen candle-power; kerosene, at twelve cents a gallon.

Now as to the price of the acetylene light plant, all depends on the price of the chandeliers and the size of the generators. We have the No. 3 generator, which furnishes gas for lighting the house, barn and scale house, making twenty-five lights in all. Our generator is large enough to furnish as many more, if we wanted them.

How beautiful it is to have the porch, which is so often used as an open-air sitting room in summer time, with fine lighting. In the entrance hall a comparatively dim light will be sufficient, while the parlor, reception or drawing room should be sufficiently brilliant to bring out the full effect of the furnishings and the costumes of the occupants, and still be free from dazzling light and deep shadows. In the dining room the table is the one object which should be brilliantly illuminated to show to advantage the snow white linen, the silver, with its polished surface, and the cut glass, with its brilliant play of lights and shadows. The bed room requires a good light for dressing, a good light for reading and a general daintiness in the treatment of the fixtures.

I will state a few facts of what acetylene is: Acetylene is a pure hydrocarbide gas. It it produced from calcium carbide and water; is twelve times as powerful as coal gas; is not poisonous, like coal or water gas; is an irritant, not a narcotic; is burned from burners with small openings—no mantels. It is safer than gas, kerosene or gasoline. It is an incomparable white light; is artificial sunlight in the form of gas. It burns steady, without flickering or noise. Has no dark center like coal or water gas. It is convenient, absolutely safe and desirable; always ready; always in place.

The total expenditure for our plant, from the time it was placed ready for use, has been an average of $15.36 a year, or a little less than 30 cents a week, with an average of four lights in use. In comparing the cost of the coal oil lamp, we could say they would average about 20 cents per week, or the acetylene light would only be 33 1-3 per cent. more than the oil lamp.

We can see the possibilities of better lights in our country homes with the progress of the country.

"SOME OF THE ATTRACTIVE FEATURES OF DAIRYING."

BY C. H. MONEGAN.

[Paper read at the Farmers' Institute held at Bath, February 12 and 13, 1908.]

The man who, some time in his life, worked hard all day in the corn field and milked three or four cows after dark, imagines he has been in the dairy business, and with the remembrance of that unreasonable hardship, declares he doesn't want any more of it in his. It is not to such dairymen that we can look for any attractive features.

Dairying is the most profitable branch of agriculture and there is none more interesting, because of the possibilities and the immediate returns. It is a cash business. The dairy cow is the only animal on the farm that pays for keep (and a profit besides).

I said we would speak of the attractive features of dairying. In my first statement, dairying is most profitable. Now we generally speak of the money end of a transaction when we think of profits. This is not always true. Dairying is profitable because it brings into play our brain power, the most valuable commodity man has to dispose of. There is no department or branch of farming a man can *cash* the use of *his* so certainly and so quickly and at as high a figure as in dairying. There is no place for numbskulls in the business; while we may find many there. There is absolutely no foundation for prejudice against dairying, and where it exists, it is because of a misconception or misunderstanding of the business and ignorance of the results that can be obtained. One farmer so uses the soil that he realizes from it $15 per acre, while another may so direct natural forces that he realizes $120 per acre.

We are led to see some attractive features in dairy farming when we receive an insight into the *possibilities* there are in dairying. We find that there are *ideals* and principles in dairying that few farmers are seeing and working up to. When we live up to our opportunities—make the most of ourselves and of our environment—it is good to live; but this the great majority of mankind is not doing. To them dairying is meagre and poor and they only look at the cash end, of which I will speak later. I wish I could say something to help them to see that to the extent they cultivate themselves, bring out by education the gifts and qualities that belong to the real dairyman, therein lies true success!

Dairying is elevating in its tendency. It requires promptness, encourages system and the keeping of accurate, daily records. It rewards careful investigation. It responds munificently to intelligent effort, which is induced by research and education; all of which gives a broader view of life and strengthens character.

The attitude and conduct towards a dairy herd necessary for good results must be such as to promote gentleness, kindness and a humane disposition, by which a man cannot help but be made better. Dairying, when rightly conducted, does not interfere with other and different interests on the farm. Because of the opportunity to enrich the land and increase its yield by keeping milk cows, it is possible for every farmer on 80 acres, who raises grain exclusively, to make his land produce enough more to feed from eight to ten cows, and still have as much grain to sell as he had before. If you doubt this, I would refer you to a farmer (a typical dairyman), who lives within two miles of this hall, who keeps eight to ten cows on 40 acres, and who has sold $250 worth of hay so far this season and still has plenty of feed left for his stock. To neglect this opportunity is criminal waste. In other words, a farm without a dairy department is no more complete than a stock of groceries without coffee or sugar.

The revenue from a dairy herd is money found! It is extra! It is the making of *two* dollars where *one* was made before. The money from an ordinary dairy, kept on good dairy principles, will pay for the farm in ten years.

The old way of giving the butter and eggs to the women if they would look after them, is very poor dairying and is being discarded very fast. These things become the main things; all else secondary. Dairying contributes more largely to the improvement of a country and keeps more money in circulation than anything else. For these reasons everyone should be interested in it: good roads, good barns, fertile land, big crops, attractive, comfortable, well furnished homes, large bank accounts, prosperous business enterprises and contented people are all evidences of a *dairy* community. A few years ago a man traveling through southern Medina, Wayne or Stark counties might have seen fine farms and lovely barns built from the productions of the *virgin soil*, by raising wheat and so forth, the women having what was got out of the cows. And a "*git*" it was, for, after furnishing the amount needed for use in the house, the butter was sold at any price that the corner grocery might pay—from 8 to 16 cents. But the day came when acid phosphates could no longer eke from the ground a paying wheat crop. The poor renter had often to look to the owner for seed for the next season. It looked as if it would soon be a land of tenants and landlords, instead of renters and landowners. But things have changed. Recently, in attending a public sale on the farm formerly owned by the late R. O. Hinsdale, I heard a couple of old German farmers say they must buy a fresh cow, as butter was 32 cents and they could produce it for less than that. Being interested, I asked them why the change. They said, "With new fangled methods of selling cream, every man was now keeping cows and getting Elgin prices, so that a man could hardly buy a good cow for love or money."

We find that the advent of large checks regularly from the dairy enables the farmer to avoid debt of any kind. Store accounts are unnecessary; doctor's bills are met promptly; taxes are paid when due; farm hands get their money regularly. Substantial improvements are made; homes are furnished; trips are taken; schools kept up; churches supported and all of these innumerable expenses are paid in cash with the revenue from the faithful herd of milk cows that are furnishing a good market for the products on the farm and furnishing that market right at home.

Recently, in conversation with L. D. Ream, the merchant at Paxton, he said to me: "A while ago I was visiting a friend up in the northeastern part of Summit County, and while out for a ride one afternoon, I told my friend I would not want to keep a grocery in that part, as I thought the land so poor that if I trusted a customer I would never get my pay, as I could not see whence it could come. But I found that even on those side hills, with a few good cows, they had a nice little check coming every pay day from Cleveland." In other locations, the first substantial return from the dairy is for butter fat. With modern facilities it can be separated from the milk immediately and put on the market, where it commands the highest price. Next to butter fat is the revenue from calves and pigs that are developed for market with skimmed milk, and last, but not least, is the enhancement of the farm by constantly returning to the soil its fertility and increasing its productiveness.

A few pointers, well to ponder over and to remember: When you sell *butter fat* you are selling sunshine. When you sell grain you are selling the fertility of the soil. If the season is right, you harvest wheat and oats once a year. You harvest milk twice a day. The dairyman leaves his family a better farm than he got, the grain raiser doesn't. A ton of wheat takes $7 worth of fertility from the soil; a ton of butter takes 50 cents. The wheat today is $30 a ton; butter $600. Which do you raise? A carload of grain is worth $250. A carload of butter is worth $5,000. Why not convert grain into butter and save freight on the 19 cars?

We all know that for the past few years short business courses have been open to the public, for young men and women to prepare themselves to enter some business position. We find these graduates in shops, banks and other offices getting $5 to $8 per week, and boarding themselves.

Just of late, short courses in dairying have been instituted in different states, the first in Wisconsin, the results from which are telling by the reports from all dairy sections, till now she stands in the lead as a dairy state. Our state has now two courses along this all important line, one a two years' course and the other six weeks, which a young man can take at a cost not exceeding $60. If he is on the ambitious order he can defray nearly all the cost by working at the dairy barns of the university. Any good dairyman would sooner pay such a hired man this amount extra, and where is the young business man that gets the wages that the dairyman pays, $20 to $25 per month, with board and washing? But we can't get such students to work, because the call now for young men equipped for taking care of thoroughbred herds of dairy cattle, who understand the testing and production of milk, breeding and feeding of dairy cattle, care and handling the products, is much greater than the supply, and wages in this line are very high.

Too many farmers think that experience is the one thing needful, and dairy school training out of place. Many a farmer does not realize that the reason his boys leave the farm is because the home is not supplied with good farm literature. From all that they can see at home or among the neighbors there are none of the finer or higher ambitions. And yet there is plenty of chance, at small cost for any man to follow a line of farming that he can be proud of. It must, for instance, be mighty dull business to milk a poor, scrub cow, get but little for it and do this year after year, "with but few other privileges." No wonder a boy runs away from home in the night. Or a bright boy sees how father and the neighbors look at farming, so he thinks he will try something that he can be "proud of!" Pride, ambition, the desire to stand well in one's profession, is the salt of human character. There ought to be more of it among farmers.

I suppose that you all read what Prof. Fraser said in his address at the National Dairy Show in Chicago. He gave a very graphic reason why so many of the dairy farmers in easy distance from Chicago did not attend the show. He gave the results of one herd of cows he had tested, the past year. This herd, and there are hundreds like it, averaged only 133 pounds of butter per cow. What does that mean? The average price of butter at Elgin the past five years was 23 cents. This would give these cows $30.59 apiece for their year's work. The cost of feed was at least $30, leaving 59 cents for profit. That meant that there are dairymen in Illinois, Indiana and Ohio who milk a cow nine and one-half times to get a little over a cent profit. That is the reason they could not go to the dairy show. They are so busy milking these poor cows that they have no time to come. A man would have to milk such a cow 45 times to get a nickle to ride on the street car.

Almost every day I hear some old farmer say: "It seems to me that dairy farming is getting to be a good deal of a discouraging proposition. A fellow has to know so much, has to have so much knowledge about cows, feeds and sanitary stables and all that; the old-time simplicity of farm life is about gone." It is true the farmer must be a more intelligent man to raise good crops on the soil today than was required 50 years ago.. We are up against the effects of ignorant farming now. Then, he had the soil fresh from the hands of an all-wise Creator; now, we have it from the hands of men who thought they did not need to know very much to farm this land. Of course it takes more knowledge today than it did then, but we can get that knowledge. It can be had for a good deal less than our ignorance has cost us. Farming is all right if we will meet the demands of the farm as we should. We must know more about our soils. We must quit keeping cows that are not fit for the business.

I think that I am safe in saying that 35 per cent. of the cows in Ohio are kept at a loss; yet, in the right hands, they might produce 10,000 pounds of 4 per cent. milk in a year. I do not claim for a moment that all cows can be made valuable dairy cows, for many of them need a wet nurse to raise their calves. But on the other hand, many a valuable animal has gone from whence no traveler returns with her good qualities unheralded, simply because some poor feeder has had the handling of her. What can you expect when a farmer says he buys Hammond Dairy Feed because his local man sells it, and tells him it is good for cows, and it doesn't cost quite so much; when for $3 or $4 per ton he could have bought "Climax," that analyzes twice as much—and in this way robs the cow, that in a short time robs the owner. There is but one way: he must study his business. He must watch, the same as the merchant in this age of competition is compelled to watch his business, or he will make a dismal failure of the dairy industry. He must not milk his cows year after year without knowing what they are doing. He must keep a record of their milk individually, and if, as matured cows, they are not giving more than 5,000 pounds of 4 per cent. milk per year, he should dispense with them. It is not necessary to have a herd of registered cows in order to make a success in dairying, or to have it attractive; and yet there is not a question but what with registered stock you are more sure that your heifer calves will make good dairy animals. (Brother Buchan will talk to you on this line.)

Another attractive feature of dairying is that, with the improvement of our inspection laws, people are learning that there are many cleanly farmers, who are able to get a much better price from good, reliable buyers for their products. The day (I am glad to say) is now past when any old thing will pass at the same price as the best. These inspectors have found creameries, cheese factories and milk depots in such filthy conditions that their reports were appalling. These places are being fast cleaned up, and we should help speed the day when this inspection is carried into every home. Because wherever poor products are made, it eventually comes back to the man behind the cow. Have you ever thought how many cows there are in the United States? It is calculated that if they all stood 13 abreast they would reach from New York to Denver, Colorado.

"SHOULD FARMERS ORGANIZE?"

BY R. S. TIDRICK.

[Read at the Farmers' Institute held at Sherodsville, February 26 and 27, 1908.]

Today the farmer is met on all sides by organizations. Organized capital and organized labor face him at every turn. Organization of people who are engaged in similar vocations is beneficial and right. In union there is strength is a rule, but not an infallible one. Governments have crumbled, religions decayed and political parties ceased to exist because of false principles. We believe the organization of any class of people will benefit them at no one else's expense if the object of such organization is to better its members and others with whom they may come in contact.

The rural population gives a stamina to the moral attitude of any community. Why not organize the farmers for the good it may do? The farmer as a tradesman, or may we call him a professional, antedates all other trades or professions. Our history as a republic depends upon the education of our people. More people are engaged in agriculture than in any other industry, and since by organization and co-operation we gain the knowledge of each others' experiences, why not organize the farmers?

From an economic standpoint, the success or failure of our country in its marvelous increase in population depends upon the farmers. We are one of a very few nations that export foodstuffs. If the farmers of our country do not increase their ability to produce in a ratio equal to the increase of our population, and you must reckon the depreciation in plant food in the land, we will soon cease to furnish food for other people and begin to look for some sister nation to furnish us foodstuffs. Why not organize, farmers, for economical reasons, if for no other? Co-operation will undoubtedly make thriftier farmers.

Another vital question that stares the farmer in the face is taxation. Anyone who will recognize facts must admit that the farmers are paying more than their share of taxes. Why not organize and compel an equitable readjustment of tax values in Ohio? There are enough farmers in Ohio if they thoroughly co-operate, to effect the passage of any just legislation.

How do we know, do you ask, that a complete organization of the farmers will bring such results? We have to look to but one organization of farmers to substantiate these and many other encouraging statements. I mean the

Grange, and use this organization as an illustration, because it is the only national organization of farmers in existence today. This organization has had a continued and growing existence for forty years. It is an institution backed by sufficient funds to make its continued existence and expansion not only possible, but highly probable. Scores of other farmers' organizations have failed and ceased to exist because of a lack of funds. The National Grange has a membership counted by millions, and good real estate loans and cash amounting at present to over one hundred thousand dollars.

The work done by the legislative committee of the National Grange and legislative committees of state granges, has done more to give the farmers a standing in local and national affairs than any other effort. There is hardly a limit to the amount of good that can be done to bring the farmer into his own, if done in a non-partisan way.

The organization to make itself effective must be able to wield sufficient influence to defeat legislation diametrically opposed to the farmers' interests and to influence the passage of laws looking to their welfare. This can be done only through a united and intelligent organization. The Grange stands for a higher agriculture and for equal distribution of taxes both state and national, and for justly distributed power.

There is no occupation to be compared with that of the farmer. With the telephone, trolley lines and rural delivery the isolation and dullness of country life have been relieved, and the farmer and his family have been brought out into a broader sphere.

The Grange is uniting the farmers in one grand, fraternal bond, whose foundation rock is an enduring, prosperous agriculture. The great principles underlying the foundation of the organization are co-operation, fraternity and education. As I look over the past and see the progress these grange organizations have made in advancing the material interests and conditions of the farmers of the nation, I believe the future success of the farmers lies in their ability to maintain an organization that will protect their interests and principles.

The aim of organization is to furnish assistance to the farmers. This may be in moral or mental development, in economical interests, or it may be in the way of getting proper legislation. The Grange formerly aimed and succeeded in reducing the middlemen's profit. The great effort of the Grange today is to protect the rights of the people against the great monopolies that, through aggregation of capital and combined influence in legislaion, seek unlimited power. So long as this organization maintains its present policies and continues its present vigorous campaign along these lines it will remain a power for good and will be recognized as such by thinking people everywhere.

And this is not all. As a great social factor in the community, and as a means of practical education through the mental development of the members who participate in its exercises, it is unsurpassed by any organization in the country.

Back a number of years, the Mississippi river, that giant representing the united strength of the raindrops, broke its bounds. It flooded the farms and ruined the homes of a number of patrons in Louisiana and Mississippi. The National Grange promptly voted several thousand dollars as a relief fund for worthy sisters and brothers. Fraternity means something. Up in Maine the Grange has built a cottage and supports twenty-five orphans. There are countless instances where patrons have come to the aid of an unfortunate and arrested the financial storm that threatened to wreck their homes.

The Farmers' Institute is not an institution for the Grange, but for any who wish to benefit by it. Had it not been for the Grange or some other farmers' organization that could have weathered the storm, we would have no Farmers' Institute today. The Grange and Institute are making of our farmers business men able to cope with city merchants and financiers.

The time was when to be called a farmer was to be called behind the times. Is it so now? To be called a farmer now means to be called a man of ability and principle, and this organization has done much to bring about this changed condition.

Let us quote briefly from Secretary Wilson's letter to Hon. N. J. Bachelder, master of the National Grange: "I have never known a time when the farmer has been as important a factor in the body politic as he is today. The educational influences that have been brought to bear upon the farmers of the country through the Grange and co-related institutions have made the farmer a more important feature of American society than he has ever been before." Mr. Wilson also states, in this same letter, that the farmers produced the articles to bring eleven hundred and fifty-eight millions of dollars into our country the last fiscal year.

In looking over a magazine of international repute—the Philadelphia North American—we find some facts there stated concerning the Grange that we wish to call your attention to: "The State Grange is the most progressive body of citizens in Pennsylvania. We believe that is proved by one fact; there is not a single public reform or economic betterment that did not first find its supporters and advocates in this organization. It has carried on the good roads movement for years. The State Grange was foremost in the fight for pure food and the national pure food laws are patterned after Pennsylvania's. The Grange forced from the grafters a sufficient school appropriation. It was the Grange that first saw the danger of destroying our timber supply. The Grange made possible the passage of universal primary election laws and many other acts worthy a christian people."

It is the advocate, promoter and conservator of all the good that other possibilities have brought to make our world brighter and better. Wherever and whenever the ideal of its founders has been kept in view, and whenever its work has been upon the lines of its Declaration of Purposes, which are all for good, then will be shadowed forth its possibilities, and let us hope, its probabilities.

Whatever it has wrought in the way of a better agriculture, a truer social life, brighter and happier homes, higher education in developing a better citizenship, a purer ballot, more equitable laws, for these it has ever aimed. Every grange should be a school that will teach its members how to bring their farms to the highest possibilities and their homes to the greatest attractiveness. It can be at once a farmers' institute, a fair, an agricultural high school, a literary society and a high moral agency in the community.

You may think I am an idealist, but careful study reveals the fact that these and many more good things are realities in any well regulated farmers' organization.

"THE IDEAL FARMER."

GRACE A. JACOB.

[Read at the Farmers' Institute held at West Milton, February, 20, 1908.]

There are men in this world who are constantly striving
To climb to the top of the Ladder of Fame,
And through vain ambition have seemingly risen,
But at death they leave only to mankind their name.

Their own selfish natures have smothered their greatness,
And at last they must fall from their once high estate.
Only those who love God and man and their doings,
And honestly labor, can be truly great.

Their lives will shine forth as a lodestar to others,
Still leading them on into pathways sublime.
Their names then are known by the title "Ideal,"
For their footprints they leave on the sands of time.

Now what shall we say of the Ideal farmer?
Is he one who is selfish and greedy for gold;
Who prefers wealth of earth to the glories of heaven,
Whose marvelous beauty has ne'er all been told?

No. The ideal farmer is generous hearted,
And he always strives for the good of mankind.
He fills his days with noble endeavors,
And does the kind deeds that his hands may find.

He lives to command the respect of others,
Deporting himself as a gentleman should,
Having a character noble and upright,
That all his actions be understood.

His farm you will find in the best of order,
The fences and buildings in good repair,
And the fields are tidy and neat in appearance,
Denoting an up-to-date farmer is there.

But before he can be an ideal farmer
In the fullest and truest sense of the word,
He must know how to treat his employes and tenants,
For only kind words from his lips should be heard.

The ideal farmer ignores not his neighbors,
But to advise them he often will try.
His conduct toward them should be of the highest.
His motto is: "Do as you would be done by."

The ideal farmer regards the Sabbath
As a day of rest and devotion to God.

He is always an active and ardent church worker,
And follows the paths that his fathers have trod.

In the words of the Bible, "Six days shalt thou labor,"
But the seventh God meant as a Sabbath of rest;
So he with his family attends the church service,
And learns from the pastor how souls can be blest.

Yet while he listens to eloquent sermons,
And strengthens his soul with religious feast,
He should drive a horse that has rested beforehand;
For a good man "regardeth the life of his beast."

He protects his live stock from the chill blasts of winter,
The hot sun of summer, the rain and the snow,
He gives them kind words, good feed and warm shelter,
And they in return will obedience show.

Next, there is the duty he owes to his country.
He should ever be ready and strive with his might
To do all he can to improve her conditions
Or lay down his life in defense of her right.

He should vote for the men best suited for office
In elections of country, state, township and school,
For his country and home by strong bonds are united,
So it is to his interest that good men should rule.

Last, there is the duty he owes to his family,
For he necessarily has a good wife
To help him to be an ideal farmer,
And to guide the affairs of his home through life.

He should always make her his partner in business,
And perform his part in domestic affairs.
He may then rest assured she will do her duty,
With the welfare of home as the chief of her prayers.

He performs with great zeal all he owes to his children,
And strives, by the aid of a good christian wife,
To rear them in right paths of duty and virtue,
And with true happiness, brighten their lives.

He understands the value of learning,
And to his children endeavors to give
That grandest of rights, a good education,
To show them the highest and best way to live.

He provides for his family some good, wholesome reading;
True genius will thrill us again and again.
The influence of good books is always ennobling;
It strengthens their love for their own fellowmen.

He takes good farm papers and keeps on advancing
In the best ways of farm life, as the years roll around,
While all farmers' institutes claim his attention,
And at every session this farmer is found.

Thus we have traced the ideal farmer
Through all his relations and duties of life;
To his country, his church, his stock and his neighbors,
To his farm and himself and his children and wife.

When the farmer has risen to such a position
That all the world calls him a truly great man,
And he raises a standard of good for his neighbors
By having a motto: "I will and I can,"

If he always lives up to his standard of duty,
And has all his life a high, noble aim,
It is then he earns justly the title, "Ideal,"
And his name should be found in the Temple of Fame.

"SHEEP—FACTS AND THEORIES."

BY GEO. P. WILLIAMS

[Paper Read at the Farmers' Institute held at Delaware, December 6, 1907.]

It would be presuming too much for me to address this audience as "brother farmers;" much more appropriate it seems that I should say "father farmers." Many of the men to whom I am speaking bred sheep before I was born; not a few of you have raised more sheep than I can ever expect to own. It is not in the attitude of a teacher, but in that of a student that I have prepared a few points on this subject

In a recent address, Prof. Hunt, of State College, Pennsylvania, said that statistics show that seven thousand young men begin farming on their own account in this state every year. If this be true of Ohio, then Delaware County should have eighty such young men, and there should be forty of that number in attendance at each of the two institutes held in the county. Even in the meagre experience of the writer, such new farmers may find something of profit.

An old college professor (of this town) once said to his class: "When I go to church and the preacher gives us a poor sermon, I do not listen half a minute; I begin to think what a good sermon might have been prepared from his theme and what I should have said on the subject." Now if any of my audience find me saying little to their profit, let them spend this twenty minutes in active, productive thinking, and they will surely be benefited by what I failed to say, rather than by what was said.

The first question that the prospective sheep breeder or enthusiast nearly always asks is this: " What type of sheep should I select?" It may be said that the selection matters little, so long as the beginner gives diligent attention to the specific problems of that particular type selected. The breeder who has had long experience with the Merino is not thereby perfectly qualified to breed with greatest success the mutton types; nor does the breeder of mutton sheep find his problems the same if he change to the Merinos. Such changing is ill advised, for it thrusts upon the shepherd anew the peculiar questions of a different type of sheep. Before we settled down to a mutton breed, we tried Merinos, cross-bred stock and long wooled market sheep; we found each profitable, yet nothing to be gained by changing from one type to another. When the type has been selected, one should not allow the shoals of his first experimental experience to induce him to hastily change; first, last and always keep studying the characteristics of your particular type and stay by it.

What shall be the shelter? Our sheep barn is the kind that has a crack between every two boards; except in the lambing season, we would prefer that these cracks were wider, rather than narrower; close housing is not advisable. Small yards for breeding ewes do not allow sufficient exercise; see that the sheep have the run of a pasture all good days in winter. Closed barns and small feed lots mean weak ewes and weak lambs at weaning time. Such conditions lead to certain loss and disappointment. The speaker knows a farmer of long experience who rejoiced, on building a new bank barn, that at last he had a suitable place for his sheep; but he soon went back to his method of a straw shed in the woods, and his old time success came back.

Feeds must be studied. We must have clover hay; hunt patches of clover all over the meadow, if you must, to get it. We prefer corn fodder to timothy hay, and could all but say that timothy is second to oats' straw. Timothy is bad for a dairy cow, but worse for a sheep. We use corn and oats mixture for grain; the more oats and the less corn the better. Oil meal occasionally is excellent; wheat bran is fine, but we practical farmers usually feed what we raise. Many feed too much grain to breeding ewes; it means over-fat ewes and weak lambs. Have ewes taking on flesh as the mating season approaches. This means a larger proportion of twins, which is desirable in the large mutton breeds.

Sheep diseases are almost entirely parasitic. To cure, one must kill the parasite; he must effectively stamp out the cause of the infection. Ineffective and inappropriate remedies applied in the most painstaking manner are little worth; the best specifics applied in a happy-go-lucky, unsystematic way, fall short. The proper remedy must be given in a well advised manner.

We have had contagious foot-rot in our flocks, and had it bad. The beginner usually gets it that way, before he knows or realizes what a scourge it may become. We would let our sheep run in the woods, like we used to do, but at the end of a week, we had to pare away the whole horn of a hoof, and found maggots by the hundreds. The front hoof, turned back against the side in lying down, introduced maggots into the wool behind the shoulder. We were compelled to shear half the wool from several sheep to get out the worms. We doctored up as best we could, fattened the sheep in winter and sold out. In a year we stocked up with the less susceptible mutton breed and have not had foot-rot since. If we were to have it again, we would keep the hoofs well trimmed of diseased horn and occasionally walk the sheep through a shallow trough containing a strong solution of blue vitriol; this seems to hold the disease in check.

We have had our experience with stomach worm as well. We opened a good many lambs before we learned enough to enable us to control the trouble. We read everything we could find on the subject. We find gasoline an effective remedy. Drench the lamb with a tablespoonful in four times as much milk, after an eighteen hours' fast, and do so three days in succession, about August

20; repeat in two weeks. Use two ounces of raw linseed oil in first and second doses instead of an equivalent amount of milk. If the lamb be stupid and decline to eat after fasting, give two tablespoonfuls of Epsom salts, repeating, if necessary. We never had perfect success in treating stomach worm till we made a free use of cathartics. When salting the sheep throughout the year, especially in winter, mix all the tobacco dust that they will eat with the salt and keep the mixture always before them in a box. Sheep will eat much more tobacco than you think.

For grub in the head we have often been advised to tar the sheep's noses weekly throughout July, August and September. We tried this, but found the tar all off the next day. Others say to put the tar on every day, but few practical farmers will do it, we among the number. So we never tar our sheep's noses. A Western ranch owner advises to pour a tablespoonful of kerosene into each nostril of a sheep known to be affected. Severe treatment, but worth trying. Much as woodland is esteemed for sheep, on sentimental and theoretical grounds, it may be said that the woods is a harbor for flies in summer and less desirable for sheep than an isolated tree or the sheep barn.

Concerning other sheep diseases the speaker has no actual experience, and feels it unprofitable to recite any unfounded theories or remedies. In conclusion it may be said that the sheep industry has been fraught with too much change. Let us have more intelligent study of the business and more systematic perseverance.

"BEAUTIFYING THE HOME."

BY MISS CORA ROWLEY.

[Paper read at the Farmers' Institute held at Eno, December 5, 1907.]

We all know that everyone is influenced by his surroundings, and if they are made attractive and beautiful the influence cannot but be good; on the other hand, it will follow that unsightly, hideous surroundings will lower the moral, spiritual and physical life of the people. We think about what we see and hear and what otherwise affects our senses, and we become more or less what we think.

When Charles Sheldon, the noted pastor and author, of Topeka, set about to raise the moral and spiritual standard of his people, he did it first by encouraging them to put beauty into their front and back yards, distributing hundreds of packages of flower seeds to the women and children and, at the same time, offering prizes for the best results obtained. Soon their yards were blooming with beauty, preaching silent but effective sermons. Some of these beauty sermons are what we need in the surroundings of our rural homes.

It is true that many improvements have been made, but there still remains much to be done. To have attractive homes does not mean they should be costly or elaborate. As evidence of this statement, I call to mind a little home that was an inspiration to me, and perhaps may be interesting to you. I had occasion several years ago to travel many times over a very bleak and dreary stretch of road. The farm houses were barren, yards treeless and devoid of all touches of beauty. Pig pens, chicken coops, scarecrows and old rubbish of all kinds were prominent features in their surroundings. In the midst of all this confusion of ugliness there was one *home*, and well it might be called a home; the others being merely houses or shelters. This home was a small log house, with whitewashed door and window casings. Over the windows were trailed green vines and from an open and snowy-curtained window bloomed a scarlet geranium in a real flower pot. The yard was large, with grass well kept, several shade trees, and beautiful blooming flowers tastefully arranged. I did not know these people, but I wished I did; I think I wished I might take dinner with them. I knew somewhere in the house there was a table cloth as white as the casing of the door, and I leave it for you to judge the quality of a dinner served by a woman with such surroundings. The influence for good such homes exert, not only on their own families, but on all the passersby, can hardly be estimated.

Attractive, cheerful home surroundings on the farm must come through the efforts of the women. When they awake and get to doing something for better conditions, the men will catch the spirit and lend a helping hand in the heavier part of the cleaning up—in tree planting, lawn mowing, removing old fences and various other things, all of which will take little time and bring rich returns. Besides, in a material sense, the value of the farm is increased several dollars per acre by its attractive appearance.

By all means encourage the children, boys and girls, to plant and grow flowers. No opportunity for cultivating a love for the beautiful should be lost, as it has a refining and enriching influence upon character, which nothing else can supply. With co-operation of all members of the household, we may have cheerful, cozy homes with little or no expense. A trip to the woods and we can have for the digging a variety of vines, such as the five-leafed ivy, bittersweet, trumpet creeper, clematis, wild rose and grapevine, all of which will work wonders in transforming unsightly buildings and fences, which we feel we cannot well dispense with, into places of beauty. If ugliness cannot be made beautiful, let us make so much beauty about it that it will cease to attract attention.

Too much emphasis cannot be placed upon the vine as an artistic and speedy beautifier, and the varieties are endless. All lovers of flowers in the country delight in exchanging bulbs and plants, and sharing with others who wish to start in the good work. Many helps for tasty arrangement can be found in the following publications: Ladies' Home Journal, Country Life, Floral Life, Home and Flowers, Delineator and many others. Some of these we may find in every neighborhood, or should, at least.

Avoid a scattering of flowers over the lawn, as it interferes with mowing and gives a spotty, inartistic appearance. Grouping several varieties together and massing at the base of buildings or at side of lawns is advised. Care should be taken that our trees are properly set, as they cannot be changed when once grown. Rows of anything on the lawn are stiff and ungraceful. A two-cent stamp sent to the National Civic Association will bring a leaflet, telling much about planting the home ground.

With the great awakening and progress in civic betterment throughout the cities and towns of our land, let us, as country residents, contribute our full share of improvement for a better and more beautiful America.

"HATCHING AND GROWING POULTRY FOR PROFIT."

BY MRS. W. E. MOHR.

[Paper read at the Farmers' Institute held at Swanton, Ferbuary 19, 1908.]

Nothing on the farm pays better than poultry if rightly managed, but there is no quicker way to lose money than with poultry if one does not use care and judgment at the start. The beginner with poultry should not venture his capital too largely nor expect to succeed without meeting with reverses and difficulties.

Every poultry raiser should have an incubator, if he expects to derive the most from poultry during the early portion of the year, when the hen is of little service in the way of hatching and when the prices for poultry are the most tempting. There are many kinds and many makes of incubators, and each kind and each make has its friends, but whatever make or kind you prefer, choose a good machine and then study it. Acquaint yourself with all its parts. Keep lamps well filled and wicks clean. Do not try to save money by buying poor oil. See that the eggs are clean and dry before placing in the incubator and be sure that the hands are clean when handling the eggs. When you have learned the best method for operating, do not change for some other method that may not work so well.

The brooder is a great factor in the rearing of chickens. A large number of chickens can be reared to a marketable age with less loss than when given to the care of hens. This has been demonstrated by experiment and shows why chicks thrive better and grow faster than when given up to the exclusive care of the hens that brood them. It is because the chicks in the brooders receive more care and attention, are not dragged through the wet grass and exposed to cold, are not troubled with lice, and are never checked in growth from the time they are hatched until they go to market.

The rearing of chicks in brooders does not differ materially from the ordinary method, except that the intelligent instinct exercised by the hen in caring for her brood has to be exercised by the attendant. Whether the chicks should be removed from the incubator soon after hatching or left until all are out of the shell depends largely upon the construction of the machine. As a rule, they should be left in the incubator until all are hatched, then removed to brooders which have been previously made ready for them, having the temperature nearly as great as the hatching heat.

For the first week the little chicks should be fed inside the brooder, so that they be confined near the heat and do not get chilled. This is very important, as most of the sickness and mortality that befall brooder chicks is due to chilling when they are very young.

Great care should be exercised in feeding. Do not overfeed, as it is sure to cause bowel trouble. They should have no food for at least thirty-six hours after hatching; then feed five or six times each day for the first week what food they will eat up clean in a short time. After this, they should be fed three times daily. Regularity in the performance of the work is very important.

After the first week, the temperature may be gradually lowered; for as the chicks grow larger they generate more heat when they nestle together and require less heat in the brooder. In connection with the brooders they should have an outside run large enough to admit of free exercise. Give the chickens all the pure water they want to drink. Charcoal is very necessary to keep chicks healthy. Have it ground fine and placed before them all the time; also ground flint. Dispose of your chickens as early as possible. Many farmers feed away their profits. The profits of poultry keeping are derived principally from two sources. the sale of poultry—mostly chickens—and the sale of eggs.

I shall not go into details as to the keeping of chickens for the egg product, but will say this much. The hen is peculiarly an egg-producing bird. She has the same predisposition for laying that the cow has for secreting milk, and although some breeds are said to be better adapted for this object than others, I believe that the proper food and care are alone wanting to produce a reasonable quantity of eggs. The success you will have with poultry depends upon the care you will give it. System simplifies the work and brings order out of chaos. Success depends upon the management and the management depends upon the man. Upon his judgment hinges the question of profit and loss.

"THE VALUE OF BIRDS TO THE FARMER."

BY LAURA ANDREWS.

[Read at the Farmers' Institute held at Leesburg, February 19 and 20, 1908]

"Go, winter, go thy ways. We want again
The twitter of the bluebird and the wren;
Leaves ever greener growing, and the shine
Of summer's sun—not thine."

One young man's definition of a small boy as "a sort of necessary nuisance," is expressive of the average person's feeling toward winter time. Its biting cold, its inexorable cruelty, its mystic calm or roaring rage are alike a menace to the unfortunate among men or beasts. The ailing or poverty-stricken half fear, half hate it; but for the hardy and the comfortable it has its charms, its rare and rich delights. Even while we abuse it, we secretly rejoice in the first snowfall and love the sound of the singing kettle, the flame of the glowing hearth, the appetizing odor of oyster stews and roasted ribs, the pastries of pumpkin and mince, and the long, perfect evenings by the family fireside. Then, too, winter is nature's house cleaning and rest period, and her stern, but effective measures produce in the temperate zone those who, of all peoples, are the purest in morals, the most alert in mentality and muscle, the finest and firmest in purpose and production. However, the ashes and dust and grime of the indoors, the hardships of the outdoors and the fuel and other bills pall upon us. We crave greenness and growth, and ere February has run half her course, we sigh for spring. We long for the murmur of running brooks, the perfume of flowering orchards, the sight of the greening wood, the drone of bees and the songs of birds; for the time when

"Slowly the earth is awakening,
Its pulses beat more strong,
The beauty of spring is breaking
Beneath the bluebird's song.
The tender twilight is lengthening,
The wind more softly blows,
The fields are changing to verdure,
The brook more softly flows.

"Sweet, Sweet! the robins are singing,
Swinging mid budding trees.
Spring! Spring! the South Wind is calling,
As it blows o'er the leas.
With a host of gallant courtiers,
Up through the fields and lanes,
Spring comes in her robes of splendor,
Queen o'er the land she reigns."

How eagerly we note and welcome the first heralds of spring. Robin Redbreast, cheery fellow, leads the vanguard with his jovial "cheer, cheer up." The American robin or fieldfare, called the migrating thrush by ornithologists, is one of the first birds to appear in the spring. Sometimes he arrives before winter is over and occasionally, if the winter is not severe and food is plenty, he does not migrate at all. He is a lively singer and always sings his loudest just before the coming of rain. How we love him! The eye brightens and the heart skips a beat in very gladness as the first notes of his sturdy song reach the ear; and father, mother and the babes vie with one another in catching the first glimpse of the intrepid little voyager. "Robin, you and I were lovers when yet my years were few. We roamed the fields and hills together. We explored the brook that ran up into the great dark woods and away over the edge of the world. We knew the old squirrel who lived in the maple tree. We heard the first frog peep. We knew the minnow that lay under the mossy log. We knew how the cowslips bloomed in the bushy swale. We heard the first soft roll of thunder in the liquid April sky. Robin, the fields are yonder! You are my better self. Scare not for the birds of paradise; for whether here or there, I shall listen for your carol in the apple tree."—L. H. Bailey, Junior Naturalist Monthly.

Robin should be pensioned for life were he to do no greater thing than be a yearly harbinger of joyous days to come. Let him regale himself on the cherries and berries, which God in his goodness has created for his use as well as for yours and mine. The bird has earned them. From the time of his coming in the late winter or early spring, while yet the snow was drifted in the hollows and the ground still hardened against plow and harrow, he has been busy ridding field, grove and orchard of the insect pests that prey upon them. But little fruit would we have for our jams and jellies, and little grain for our bread were it not for robin and his feathered fellows. They are our friends and destroy annually inconceivable numbers of insects in their various stages, and also large quantities of noxious weed seeds. Insects increase with unbelievable rapidity. Giddy young pa and ma bug of today will be setting their great-great-grandchildren up to housekeeping by day after tomorrow. Were it not for the birds, the progeny of a few insects would soon overrun the earth; every green thing would be destroyed within a few years, and all flesh would soon, of necessity, become again as dust. For all of this we, in our gross ignorance or blind rage, destroy them relentlessly with gun or trap; and why, forsooth? Because they, like ourselves, crave and demand a bit of fruit and grain with their meat. And sometimes it is from wanton cruelty or a desire to bedeck ourselves like so many savages, with their plumage.

Except on rare occasions, the best place for the old "shooting iron" is where it ceases to be a menace to birds, live stock or small boys. Through example and precept, young America must be taught to preserve the birds and not to exterminate them. And you and I, sisters, must confine ourselves to ostrich plumes (large or small, in accordance with our means), and to those really beautiful creations of the milliner's art from the dyed and curled plumage of our barnyard fowls. The face shadowed by a hat unadorned save by a turkey feather and bow of velvet is far lovelier than that whose owner affects the costly aigrette or bird of paradise or form of some poor, murdered songster.

"A mist of green on the willows,
A flash of blue in the rain,
And the brisk wind pipes
And the brooklet stripes
With silver hill and plain.
Hark! the bluebirds, the bluebirds
Have come to us again!

"The snowdrop peeps to the sunlight
Where last year's leaves have lain;
And a fluted song
Tells the heart, 'Be strong,'
The darkest days will wane;
And the bluebirds, the bluebirds
Will always come again."

The bluebirds are familiar and well-known favorites. Like the robins, they are very early arrivals in the late winter or early spring, and sometimes they winter in the North. Their constant roving in quest of food has made them hardy and courageous. Poetic fancy has woven itself more closely about them than even about the robins, and when we see the first bluebird of spring hopping about the bare trees we feel as enthusiastic as Riley did when he sang:

"Jest rain and snow! and rain again!
And dribble! drop! and blow!
Then snow! And thaw! and slush! and then—
Some more rain and snow.

"This morning I was most afeared
To wake up—when, by jing!
I seen the sun shine out and heard
The first bluebird of spring!

"The winter's shroud was rent apart,
The sun burst forth in glee,
And when that *bluebird* sung, my heart
Hopped out of bed with me."

Our old friend, the catbird, is a quaint songster. Before the break of day he tunes his cheerful roundelay while searching out his insect prey. He is our northern mockingbird. He imitates in the woodland-depths the tunes of other birds with accuracy and melody; and, like the nightingale, invades the late twilight hour, when he bursts into a very delirium of beautiful cadence and perfect harmony. During the day he goes about his business of bug hunting in silence, or with the familiar cat call that has named him.

What is more delightful than the lark's song, as he rises by successive springs, ever higher and higher, until he hovers among the clouds? The common food of young skylarks is worms and insects, but the adults subsist on weed seeds and herbage. Wood larks feed on small beetles and caterpillars and the seeds of numerous wild plants. The meadow pipit or titlark is an eater of slugs, worms and other pests. Like the skylark, it sings in air, but it also pours out its mellow notes standing on the ground.

That indefatigable warbler, the red-eyed vireo or greenlet, is ever prying about the thick foliage in search of insects and caterpillars. The wagtails are lively little birds which run along the sides of small streams in search of insects and worms and which are constant attendants on the plow in summer and fall.

A curious bird is the American redstart. He is always on the outlook for insects. He sees them afar off and pursues them swiftly and relentlessly. Who has not heard the plaintive cry of the peewee or phoebe. He is the housekeeper's friend, being very fond of flies and greatly relishing mosquitoes.

The tyrant shrike or flycatcher, commonly called the kingbird, is a courageous fellow, and larger creatures than flies and other insects find it safest to keep out of his reach when his "dander is up." He will tackle almost anything. The finches of various sorts are quite numerous and very tuneful. They feed principally on insects and seeds. The goldfinch, sweet songster of the orchards, is very fond of thistle seeds.

The titmice are small but sprightly birds, whose food consists of fruit, seeds and plenty of insects. They often kill other birds and pick out their brains for food. Their voices are mostly unmusical. However, all of us enjoy the jingling warble of the blackcap titmouse or chickadee. A hardy fellow is he. He can be seen almost any fine winter day high on the bare limb of a tree, merrily singing his chick-a-dee-dee. He manages to eke out an existence, even in the cheerless winters of the fur-producing North. Like the creepers and nuthatches, with whom he associates, he is a busy chatterer, dieting on insects and their larvae and eggs.

The cedar or cherry bird takes his tithe of cherries and mulberries, but more than repays the owners by his attacks on the all-despoiling canker worm, which works so much havoc on our apple and elm trees. Swallows subsist entirely on insects which, by means of their wide mouths, they easily catch in air. The chimney swallow raises two broods a year and she is a worthy example of constant industry and affection. Under hedges, in pasture field, along paths or upturned soil, wherever her food is to be found, she skims, and the farmer and his wife are saved much annoyance and loss because of the myriads of insects which she catches. The swallows are the guardians of our corn, and the killing of them gives blasts, mildew and vermin the needed chance to cut short or destroy our crops. In Spain, France and Italy, where the swallow is used for food, corn harvests fail frequently. When a hawk or owl appears, a swallow gives a shrill cry, which calls together his kind and the house martins and other small birds. In a body, they pursue and strike the enemy until he is glad to depart. A cat intent on robbing a nest is treated in like manner. Cats, by the way, do inestimable harm by destroying the fledglings of birds before or at the time of leaving the nest.

Our jaybird is a handsome and, in his own way, a useful fellow and funny mimic. He is also a thief. He eats berries, acorns, seeds, carrion and the eggs and young of other birds, by whom he is hated cordially.

The grosbeak or redbird stores away immense quantities of winter provisions. The forests resound with his melody and his notes are said to resemble those of the nightingale. He is one of our most loved birds.

The house wren is a busy, pest-destroying little minstrel, who is ever ready to utilize any old place as her abode. As she builds her cozy nest, she twitters happily:

"I have nested in a boot-leg,
I've raised children in a pump,
I have laid my eggs in straw hats,
In tin cans on the dump.
I have just about concluded
That children can be raised
If one will only 'tend them,
Just any kind of place."

The English sparrow is a pesky creature. In his English home he does valuable work, and we may misjudge him to some extent. But he does a great deal of harm by killing our native birds, picking out the eyes of their young, stopping up our drain pipes with his mangy litter and making raids on our grain fields. Our common sparrows are our earliest and sweetest warblers and are valuable birds.

The real blackbird is a solitary fellow, feeding on worms and snails. The cow blackbird bothers rice and corn fields, but is more partial to insects. The red-winged and crow blackbirds are very greedy and travel in large companies. They become a menace to crops at times, yet in the early spring they do good work in ridding the fields of the very pests that prey upon their produce later on.

The bobolink or rice bird is a grand musician. He destroys large amounts of insects and their larvae, but is a nuisance in the rice fields. But their wholesale destruction there is not altogether wise. The creepers are our smallest insect-eating birds and among our very best.

Ohio has two varieties of cuckoos and these birds are death on caterpillars and canker worms, and are very special friends to the farmer.

Orioles eat fruit, insects and grain, as do also the starlings. The last bird is fond of noxious weed seeds.

Our common carrion crow is an amusing, mischievous, thievish mimic, stealing eggs, young poultry and young rabbits at every chance. He feeds on carrion, though, and, like others of his tribe supposed to be injurious to man's interests, makes amends for his evil ways by destroying immense quantities of noxious insects and vermin. Like the wagtail, he loves to follow the plow for dainties.

Woodpeckers as a family live on insects pecked from decayed trees and the bark of sound ones. Our red-headed one does some harm to orchards and fields, but, like the much-maligned sapsucker, does more good than he has ever been credited with. And none of us would want the vision of the saucy fellow to pass forever way.

"He's the sassiest critter that ever I see,
An' he sets there a-peekin' and bobbin' at me,
While he's carvin' a notch in the wind-shaky crotch
O' that moss-covered hickory tree.
Dinged if ever I see such a tormentin' bird;
When I woke up this mornin', the first thing I heard
Was his 'rubby-dub-dub' on an ole holler stub
'Fore the other fowls twittered 'r stirred.

"He's the beatenest bird—an' he don't care a straw,
W'y, he takes what he wants without license 'r law,
And he chatters with fun at the crack of a gun,
While he's fillin' his famishin' craw.

I'll declare if I don't kind o' fancy 'im tho'
He's so blamed independent and keerless, you know;
An' I'd feel sort o' bad, an' consider'ble sad
If he'd mind my complainin' an' go."

With the exception of the sharp-chinned or cooper's hawk, our common hawks and owls are rather beneficial in destroying small rodents which injure the crops. Dr. C. Hart Merriam, ornithologist of the United States Department of Agriculture, estimates that the state of Pennsylvania, by offering a bounty on hawks and owls, which resulted in the killing of over one hundred thousand of them, sustained a loss of nearly four million dollars in one year.

And the quail, the target of every hunter, is the farmer's very best friend. His diet is made up of insects and weed seeds exclusively. He is almost the only bird that will eat chinch bugs. Cut worms and grubs are also a part of his diet.

"There's a plump chap in a speckled coat,
And he sits on the zigzag rail remote,
Where he whistles at breezy, bracing morn
When the buckwheat is ripe and stacked the corn
Bob White! Bob White! Bob White!"

And Bob White must be protected the year around or he will yet become exterminated. The crop of one quail, on being examined, was found to contain over three hundred potato bugs, and one has only to follow the trail of a covey of quail over the snow to find where they have been feasting off the seeds of weeds sticking above the snow. When sleet covers every edible thing with a coat of mail, it is well to scatter a bit of grain where they can reach it. Otherwise, many of them starve, and we need them every one.

Birds, by flitting about, assist the bees in fertilizing our fruit, flowers and clover. And here I want to say a good word for that other winged creature, the bumblebee. All insects are not injurious. George Compere, chief field entomologist for the Department of Horticulture, state of California, and also for Australia, has taken seven tours around the world in search of natural insect enemies to the various fruit pests of these countries. His discovery and bringing to California of the Brazilian beetle, which preys on the fruit fly pest, is saving much loss to growers. He has brought from China a minute wasp, which is fast destroying the dreaded purple scale.

The bumblebee does her great work for us in the clover fields. The honey bee, whose mandible is short, confines itself to the white clover, and the larger bumblebee has a monopoly of the red. As she drones from head to head, sucking deep from rich sweets stored within the long flower tubes, she carries on her fuzzy limbs the pollen dust so necessary to the formation of seed. Through the bumblebee our clover blossoms are best fertilized; therefore, we must try to shield her from injury. I say her because the gentlemen of the bumblebee family live a care-free existence all summer and perish with the coming of frost. They are stingless. The ladies of the household are best let alone. Nature has given them an efficient means of fighting life's battles. They live from two to five years. Ten to seventeen of them will store their food supplies in one family mansion and here they hibernate until spring. If they have sufficient strength left, after the going of winter, to reach the honey stored just above them, they feast a few days and then each goes forth to prepare a new domicile for herself and children. Colonel Isaac W. Brown, the famous bird and bee man, declares in a recent copy of the "Bible Record" that bumblebees are not nearly so plentiful now as during his boyhood; and that in twenty or twenty-five years from now they will be worth from twenty-five to fifty dollars a colony. He advocates the making and placing of bumblebee boxes near orchards and clover fields.

Let us do our utmost to preserve the bumblebee and protect and aid our beautiful friends and allies, the birds. We may begin right now, by having the little folks hang out a piece of fat attached to a string for the benefit of the little winter birds, who are often hard pressed for food, and for the early arrivals among the migratory ones.

Our best and greatest characters have been bird lovers and protectors. Abraham Lincoln tenderly loved the birds. No braver soldier ever breathed than General Custer, yet this little story of kindliness is told of him: "While at the head of his troops on the march over the plains of the West, he once noticed a frightened bird hovering over her nest and nestlings, which lay directly in his path. He reined his horse instantly and commanded a change in the line of march; and, thanks to his tender heart, the bird and her babies were unharmed."

Section 6960 of the State Laws of Ohio should be read on every Arbor Day to the children of our schools, and no harm would be done if all of us were to become familiar with it. Let our motto be henceforth:

"The wise and strong should seek
The welfare of the weak."

Even though the birds were of no practical value, from an aesthetic point of view life for the most of us would lose half its flavor were our fields and groves to become tuneless.

Farm homes are the happiest, homiest homes, and the farmer and his good wife of all people most blessed. Be right proud, O farmer lad and lass, of your birthplace and your heritage of healthy ,honest country blood. Be not in too great haste to leave the birds, the streams, the woods and the life-giving soil for the city's ceaseless toil and moil. As for me:

"You may talk about your cities
With their culture and their gold,
And their palaces of marble,
And their archives dim and old.
But for me the wide flung country,
With the fragrance of the hay,
And the call of mating songsters,
And the sunset clouds at play."

"THE FARMER'S WIFE."

BY MRS. J. W. CONOVER, MASON, OHIO.

[Paper read at the Farmers' Institute held at Blue Ash, February 11, 1908.]

I am sure that you will agree with me that the farmer should have a wife, otherwise we could not consider her this afternoon. Surely in the case of a farmer, she is essential in the establishment of a home. "As the cord unto the bow is, so is she unto the farmer." Indeed, isn't she the chief corner-stone? Wouldn't the structure of the farmer's home fall into ruins, if she were to absent herself from it permanently? I've known farmers, haven't you, who could not spare their wives a week, nor one day even. May I talk just a little while to the young men farmers here? You are looking forward with pleasure to the coming of her, who, with sweet, reluctant steps, is advancing to meet you; she is somewhere in the world. In due time you will meet her. You need the very best woman that can be found for your life partner. Do not let Cupid blind your eyes, but with them wide open look for a girl with a sunny disposition, a strong body and a Christian heart. A good education will not hurt her; it will add to her value. Notice if she is a filial daughter; if she loves home; if she loves children. These qualities go far toward home-making.

Is it a desirable thing to be a farmer's wife? Yes, in many respects it is. Does she have hard work to do? Yes, very hard. Does she spend many lonely hours. Yes, many. But these things may not be great drawbacks; exercise is necessary to produce sound health. Did you ever think how hard the city woman may work in the gymnasium or at home at physical culture to accomplish the result which the farmer's wife accomplishes doing her daily duties? The farmer's wife really has five trades in one—she is housekeeper, cook, laundress, dairymaid, poultry raiser, etc. The *variety* of her work gives her an excellent opportunity to rest some muscles, while working others. Happy is she in this variety. True, she spends many lonely hours while husband and his helpers are in the fields, perhaps children absent in school; but if she is a lover of nature, these are some of her happiest hours. If she be a lover of books, she need never be alone; the best company of all the ages is hers—unless, indeed, she has for a husband a man like the one described by Amos R. Wells, in his poem, "Them Dickens."

You have, no doubt, heard the story told of one who was eulogizing the Pilgrim Fathers. He said that they suffered exile from their native land, and the hardships incident to making homes in a rigorous climate, with insufficient food and clothing; going on thus to show of what noble stuff the Pilgrim Fathers were made. True, said another man, rising, so they did suffer all this; but what of the Pilgrim Mothers? I propose a toast to the Pilgrim Mothers; they suffered exile and hardships and the Pilgrim Fathers besides, and the latter may not have been a light matter. The Pilgrim Fathers were molded of noble stuff, but it was *stern* material mixed with a large ego. So the farmers' wives endure loneliness and hard work and hard times and the *farmers* besides. Take heed to yourselves, brothers, that none shall pity your wife because of you.

In giving an address at the Monroe Farmers' Institute a few years ago, I heard Joseph Culbertson make a strong plea for a system of so placing the farm buildings that four adjoining farmers might form a little community, which would be advantageous socially and in other ways. He said that if the four homes, with their accompanying outbuildings, could be located at the cross roads, one good well might do for all, one ice house could supply the four families, and mentioned many other advantages, chief of which were the social advantages for the women. He said that he had seen one of his neighbor women walk a mile on a hot summer afternoon, carry a baby and an umbrella and a package, climb a fence on the way, all for the sake of spending an hour and a half with another woman. The cross road settlement would relieve a woman from having to secure her social pleasures under such difficulties. But since so many of our farm homes are located as they are, nothing short of a legal enactment would realize this really good idea.

A few years ago, when Mr. Haupert was our pastor here, we met one Sunday evening at Christian Endeavor meeting. There had been a marvelous sunset, and even as we gathered for the meeting, the wonderful tints left by the splendor of the sunset were quietly fading away. Mr. Haupert spoke to me about the sunset, asking if I had seen it. I said yes, certainly, I always looked out for fine sunsets, and that evening I had had a specially good opportunity, for I had milked seven cows before coming to the meeting, and had had good opportunity to watch the wonderful glory of the good night of the king of day, as I carried milk from the barn to the house on my several trips, for I am a great lover of nature. He had watched the glorious sunset to his heart's content, coming up from Somerset. He condoled with me that I had had to do so much milking, but I did not want condolence. I am willing to do any work that comes to my hand. Loving the wonders of nature dignifies and glorifies the humblest work.

May I make a plea for country literary societies? The farmers' wives themselves should organize and keep them going. This would keep the women from becoming rusty in the book lore learned in school days. They would be surprised to find how much they are adding to their stock of information. The time will come when they will feel like handing over to their children the active work of a literary society, but that is all right, we'll still be there as guests. The time so spent is replete with profit.

Those of us who read the Cincinnati Post last fall will recall the earnest discussion of the question, "Should a Wife Have a Salary?" Many, both men and women, expressed their opinions, some taking one side, others the opposite side, but there were more who thought that she should have a salary than there were of those who thought that she should not. While the wife may not *earn* money equally with the husband, yet she would earn it if she did the same work for any other family than her own. If this is true of women in general, much more does it apply to a farmer's wife; for the product of her hands may, and does, add to the annual income. A married man said: "It took me ten years to learn that the cheapest way to run a home was to give my wife a stated sum every month. I know I have saved money by this plan. She pays as she goes, and I now have no big bills coming in unexpectedly, when perhaps I am hard up. We live better than we did under the old system, and what is more, my wife has a bank account, slowly but surely growing."

Of course, a wife must have judgment and exercise care if she is to have the disbursement of family funds. Bargain sales must be no temptation to her.

The family is the nursery of the nation, and the wife is the right hand assistant. In no other occupation is the man's part so woven with the woman's as in farm work. In some occupations the woman is at home alone all day, while the man is busy in shop or office, but the farmer and his wife work hand in hand; they prosper or the contrary together. Sometimes she has to cheer him when depressed by failure of crops. Do you remember the poem, "Good wife, what are you singin' for? You know we've lost our hay." And her invariable reply to all his complaints, "We've always been provided for, and we shall always be."

Woman's true sphere is home. I have all respect for the business woman. I approve of her *under present* conditions. I'd be one myself if I were not a farmer's wife. It was necessary for women to go into public life during the Civil War, and the daughters of those women have entered more lines of business than their mothers did, until now *every* avocation but *seven* is open to women. But, my friends, it isn't right; it is not natural. Home is woman's place, God appointed; when she leaves it, home and the family suffer a loss.

I believe that this woman exodus into the business world will result in time, perhaps many years, in our swinging entirely around the circle, and we shall land just where we started, in the home, doing the important work of scientific cooking, making a special study of chemistry and being able to provide a balanced ration for our families, just as the farmer does for his stock. However, men will have had their eyes opened; they will have seen women doing that work which some man should have done, doing it for the pay that is in it. The natural result will be that women will be paid for their work in the home, and they will no longer have any excuse for entering the busniess world to earn money.

The farmer's wife is emphatically an expert housekeeper; she *has* to be. Blessed is she if she has learned that the cleanest house is not the one that goes through the throes of house-cleaning the oftenest, but it is the result of eternal warfare against the *causes* that produce dirt. *Keeping* out dirt is more easily done than *putting* it out

Happy is the farmer's wife if, in addition to having placed her affections in the keeping of a man who is industrious, good tempered, with tact, good judgment, common sense and piety, a Christian man in the truest sense of the word, happy is she if there are little ones to call her mother . "The hand that rocks the cradle rules the world." That is true as long as we can keep the world in the cradle; but it grows and gets out of the cradle, so we must surround it with such influences that it will wear out into the street an *armor* woven from a mother's love and a father's example and comradeship, that will shield it from the things that it will meet which will corrupt and debase.

Sisters, not only farmers' wives, but all women, we must keep our eyes open to the fact that *downward* influences are all around us, and we must use *every* means at hand to fortify ourselves and our dear young people to meet and conquer the wrong. Let us ally ourselves with the church of our choice, for fellowship in the church strengthens us. Let us also be known on the right side of every good cause, the causes which are striving to uplift mankind. One of the best of these is the Woman's Christian Temperance Union. Marie Brehm said that the W. C. T. U. is the *widest* door of opportunity that ever opened to women; she meant women alone, of course. We gladly welcome men as honorary members, but the organization is a woman's organization. Can you doubt that God's blessing rests on this organization, when it has lived and grown from a handful to a mighty host, and worked on an entirely unselfish line, and succeeded in accomplishing such wonders as it has done? God's hand is on it guiding it and blessing it. Then, if this is the door of opportunity, let us enter it gladly. I always rejoice to welcome a farmer's wife into the W. C. T. U.

How much I might say to eulogize the farmer's wife; but I dare not, when I belong to the class myself, and I am happy that I do belong to so noble a class.

"FORESTRY."

BY H. C. RODGERS.

[Read at the Farmers' Institute held at Mechanicsburg, January 31, 1908.]

There are men in this audience who, fifty years ago, were cutting and burning fine trees in log piles, their only object being to rid the land of the timber, so it might be planted to farm crops.

Today we are planting forest trees on this same land, knowing the demand for timber of all kinds will be so great in the near future that it will pay us better to grow trees than to farm the land.

This is a remarkable change in conditions, and demands our close consideration and study of the causes that have brought this great revolution to hand.

It seems to be characteristic of the American people to think that all the natural resources of the earth, such as minerals, timber, etc., which have been accumulating hundreds and thousands of years, are for the benefit of the present generation only, and they proceed to utilize what they can of the products of nature and to destroy what cannot be immediately used, with scarcely a thought for the future.

This policy has been wonderfully effective in developing wealth from these stored up treasures of the earth for the men engaged in it, but if continued much longer will prove disastrous in the near future.

It is now time we should stop to think and take stock of our natural resources, especially our timber supply. The lumber industry of this country has ranked fourth in importance of the great industries, but if the statistics of our Government Forestry Bureau are to be relied upon, there must be radical changes in our present methods or this great industry will die in less than twenty-five years for want of material with which to work.

Wood has been of such common use in thousands of ways that we have almost come to look upon it as one of the common bounties of nature, such as water or air.

Few of us consider for one moment that there must be trees before there can be lumber or wood of any kind. It is frequently said that concrete and steel will displace wood as a building material and for other uses. Very true it is that these materials are being used in increasing quantity every year, but this does not seem to lessen the demand for wood at all.

"Oh, well," the thoughtless ones will say, "the wood will come from somewhere, or something else will be used instead." But this is not true. No place is there to be found great or inexhaustible supplies of timber. Forty years ago the great pine forests of Michigan and Wisconsin were the best and most accessible in the world, and were then considered inexhaustible. Today they are gone, and the mills that cut these vast areas clean of trees have moved to our southern and western states, and in a few years we will see the Southland stripped bare of her trees.

A short time ago the supply of trees in the Pacific slope forests was thought to be without end, but more recent and better estimates show that, with the enormous yearly cut of lumber now going on, and the increase that is certain to come as the supply of pine in the Southern states grows less these forests, the finest in the land, will be swept clean in less than forty years.

Many of these great trees of our Pacific slope are three hundred feet high and three thousand years of age. They are the patriarchs and giants of the forest world, hoary with age, grand and awe-inspiring to look upon, with a solemnity all their own, almost compelling one to stand beside these monarchs of long gone centuries with bowed head.

It seems a great pity that the hand of man should be allowed to destroy in a day that which nature, with her sunshine and wind, her rain and snow, has been so patiently building for thirty centuries of time.

I am glad the strong arm of our national government has reached out and taken in charge some of these western mountain slopes, and will preserve some of these grand monuments to ages long past.

I speak feelingly of these trees on our far Pacific shores, for, as many of you know, I lived for several years almost in the shadow of these dark forests and mountain crags, and I almost learned to love and reverence these silent dwellers in their mountain home.

I quote from a recent circular from the forest service at Washington, as follows: "The situation in brief is this: We have apparently about a fifteen years' supply of hard wood lumber now ready to cut. The inevitable conclusion is that there are lean years close ahead in the use of hard wood timber. There is sure to be a gap between the supply which exists and the supply which will have to be provided. How large that gap will be depends upon how soon and how effectively we begin to make provisions for the future supply. The present indications are that, in spite of the best we can do, there will be a shortage of hard wood timber running through at least fifteen years. How acute that shortage will become and how serious a check it will put upon the industries concerned, cannot now be foretold. That it will strike at the very foundation of some of the country's most important industries is unquestionable. This much is true beyond doubt, that we are dangerously near a hard wood famine and have made no provision against it."

Those opinions come from the Forestry Bureau at Washington, and are based upon the most reliable estimates obtainable.

Gifford Pinchot, chief of the Forestry Department at Washington, says: "The United States has already crossed the verge of a timber famine so severe that its blighting effects will be felt in every household in the land."

There has been a steady increase in the amount of lumber cut and used each year, and this in spite of rapidly advancing prices.

The government statistics of the amount of lumber cut during the year 1906 are just published, and the figures are so large we cannot realize what they mean. Forty billion feet, board measure! This lumber was valued at seven hundred million dollars at the mills. These figures are too big to be realized, but the fact that we are cutting and using our trees about four times as fast as nature is growing them, is easily grasped and understood.

These facts mean that we, as a nation, must change our present methods of destroying the timber, unless we make some provision for a new supply, else this will be a treeless land with all the evils that have ever followed such a suicidal policy.

Destroying our forests does not mean simply that lumber will be scarce and high priced, but it means that whole states almost will be left worthless and barren by reason of the unrestrained floods washing away the fertile soil. This soil fills up the river channels, causing them to overflow the rich bottom lands; it fills up the harbors at the mouth of great rivers and causes the spending of untold millions of dollars in dredging and the building of levees in vain attempt to control the river's course.

With the passing of the forests, also go the birds, the farmers' best friends. To my mind, there is unquestionably a close connection between the rapidly diminishing number of birds and the equally rapid increase of all kinds of destructive insects and worms. The birds wage a never-ending war on all kinds of bugs and insects, and this with scarcely any cost to the farmer, for the small amount of grain or fruit that the birds destroy is paid for a hundredfold in the insects and worms eaten by the birds. I do not tell you of these troubles and losses that are coming on us so fast, only that I wish to awaken a personal interest in this subject that has been too long neglected, and I should not talk about future trouble and calamity, did I not know that we can take means to meet and counteract much of this evil we have so heedlessly brought upon ourselves.

Our national government sees and our state governments are coming to see this calamity that threatens us. If the land owners—the farmers—of this country can be made to see and realize this danger, all will be well.

There are nearly one hundred million acres of rough, non-agricultural land in this country that has been stripped of all its valuable timber, and is virtually abandoned. The only thought given it is to get what little pasturage grows on it. If intelligent care were given this natural wood land, it can be made to produce many times as much value in the timber it will grow as is now obtained from its scant pasturage value.

The men who own this kind of land must be made to see the great loss to themselves, of a policy that does not utilize this land to its highest value. This loss is not only to the owners of this land, but affects the whole nation as well, and will, in the near future, have to be checked by suitable legislation, as has already been done by the wisest of the European countries.

Government and state records all show that wherever "farm forestry" (that is, the raising of suitable, quick growing trees on agricultural land) has been tried in an intelligent manner, it has invariably paid the men who engaged in it better, much better, than ordinary farming.

A recent writer in the "Review of Reviews," after summing up our timber situation, declares "that the only thing that will save this country from a national calamity is the planting of ten acres of trees on every unforested, plantable quarter of a section of land."

After several years' study of practical forest tree planting, and of the timber supply in relation to the future lumber industry, I will affirm that if every man owning one hundred and sixty acres of land would plant ten acres of it to suitable forest trees, this ten acres will prove the most profitable part of the farm.

A treeless country is prey to all the forces of nature; the burning summer sun, with the withering hot blasts playing over a tree stripped plain; the biting winter winds seeking out both man and beast, with nothing to stay their fury; the floods, wreaking their vengeance unrestrained, leaving destruction and ruin in their path.

One-half of the beauty of the world is lost when the trees are gone. Those men who grow stately groves and forests to beautify the landscape, affording protection to man and beast, will be public benefactors in the truest sense.

We who own land owe a duty to the future not to strip the earth bare of trees. Rather shall we plant broad acres to forests that will remain after us, noble monuments to our memory, more lasting than marble shaft or block of stone.

"FIELD LABORERS."

BY SUSIE D. MICHEY.

[Paper read at the Farmers' Institute held at Greenwich, December 11, 1907.]

How small a farm was the garden of Eden, where our first ancestors began, as compared with our whole earth, which we now might consider one great farm or garden?

It is said that man cultivates about one-tenth the land surface of the earth, while nine-tenths is covered by forests and pasture land. So we see that man cultivates one-tenth of the earth while nature does nine-tenths alone, and helps man with his one-tenth.

Man will say we do more than that, for what laborers do more than we? Are we more insignificant than nature's laborers, the worm, beetle, bird, bee and small animals?

There are vast pasture lands here, extensive forests there; there are woods, jungles and heaths, but they have all been planted. The soil was prepared in the first instance and has been renewed since by laborers who are not less truly deserving of the name than the plowman, though they do not work with his implements.

Our deserts are disappearing and the earth is growing to be one mass of green vegetation through our small, yet countless, laborers. They work so quietly with their machinery that they are unnoticed.

If we make an invoice of man's farming, we will find that he grows about two hundred and fifty different species of plants and two hundred partly domesticated animals; but on the great natural farm, things are done on a grander scale. Nature grows not less than one hundred and forty thousand species of plants, and the different species of live stock would amount to some millions.

It has taken ages of ceaseless work to make soil upon our bare rocks. The first vegetation that would grow upon our rocks were the lichens. This decay of vegetable matter year after year would make a little better soil which would germinate the seed of some higher plant, until our earth is now covered by a mass of vegetation.

Mr. Ball says: "Deserts are altogether a thing of the past, only in places of extreme rarity of rain." So our soil has been increased and fertilized by nature's laborers. They have been at work by the millions, reclaiming the barren spots and fitting them for man, who sows the best seed and reaps the reward of the unseen, unnoticed and often abused laborers who are incessantly at work for him.

If nature's plowman, the worm, should desert the farmer, he would find that he could only do the rough part of the work. The frost also breaks up the ground and aids the work of the harrow.

At last the ground is fitted, the seed is sown, and now surely the farmer will need only the sun and rain and he will be able to reap a good crop. Can he fight the great army of slugs, grubs and insects which seem to be ever on the alert? Will the birds and bees be of any benefit to him then? The honest man will answer, yes, and will not begrudge a few grains of wheat to our birds. And so the fruit farmer and the truckman owe their success to the humble bee, who carries the pollen from flower to flower.

God, in his great wisdom, has planned everything perfectly. No soil is fertile with mineral matter alone, but must contain at least one-half organic matter, either vegetable or animal, and then it would not be rich enough to grow corn, but would grow weeds or wiry grass. The organic matter is thoroughly mixed and pulverized by the earth worm. The darker our soil, the more organic matter it contains, which has been plowed and worked by our earth worm.

The earth worm is an animal endowed with wonderful power of adaptation to adverse circumstances. Bodily injury does not kill it. Eight times in succession one worm was beheaded, and each time grew a new head; another was cut into fourteen pieces and thirteen became perfect worms, while only one died. The worm has no teeth, but a mouth with two lips, by which it is enabled to grasp any decayed body, flowers or leaves and drag them into his burrow, where they are made extremely fine. By burrowing and loosening the soil, it makes it easier for all roots to grow down and for the rain to saturate the soil. The earth without worms would soon become cold, hard bound, void of fermentation and unfertile. The worm will eat anything eatable and will feed daintily upon half-decayed flowers, leaves or their own dead comrades.

An experiment has been tried of putting two worms in a large dish of sand and strewing leaves on the top. In a short time they had converted the top layer into a vegetable mold four inches deep. One naturalist claims that in a warm climate, where they have plenty of rainfall, the amount of soil thrown up by the earth worm would be from fourteen to eighteen tons per acre. So the farmer who decides to give a certain field rest, by letting the grass or clover go back on the ground, will find the earth worm a great aid to him in enriching the soil.

Now we give our attention and praise to a smaller animal than the worm—the ant. It seems that the ant works in places where it is not suitable for the worm. The hill-building ants choose rock to build upon and gradually cover the surface with soil. Grass and other seeds soon take possession of the soil; thus the soil is bound to the rock by various roots, and vegetation covers waste ground. They are not contented to stay in one place, but next year will begin their labors in another barren or rocky spot; thus their work goes on year after year. The white ant abounds in central Africa. It lives underground, and when obliged to come out for food, it builds a tunnel of mud within which it always remains. The termite, which resembles the white ant, builds tunnels, but lives upon dead wood. In some districts of Africa there are millions of trees covered with tubes or tunnels, their value being that they bury the dead wood and bring up a great amount of soil, exposing it to the air. The nests, or mounds, are often of huge size, being from ten to seventeen feet high, while the excavations beneath are many yards deep. The mounds are composed of many tunnels and chambers, and their walls are so strong that they will bear the weight of a man on horseback; but at last, with all its strength, it must give way to the tropical rains, which continue for two or three months. The soil is returned to the earth with the admixure of animal matter. Fresh soil is continually exposed to the air and a way made for the rain to penetrate the underlying rock and carry on the decaying process.

Burrowing animals have been especially useful to the soil by adding organic and mineral matter to the soil; their burrows help to drain the soil.

In the western part of North America we find a large number of ground squirrels. They burrow in the ground, lay up their store of food in the soil, living together in large villages. Another little burrowing animal we find in our fields and yards is the mole. Although found in greater numbers in England, we have had some experience with them in Ohio. He has a good many enemies because he uproots the crops, exposing and eating their roots. In the spring he eats a few blades of corn. Thus we see it does some damage, but the benefit rendered by the mole generally far exceeds the loss. The mole is a great plowman, overturning the soil and making it lighter. It devours all kinds of small animals; in fact, it lives almost entirely upon animal food, such as grubs, worms, insects, also mice, lizards, frogs and dead birds. A large quantity of vegetable matter is carried into the earth for their nests, greatly benefiting and enriching the soil.

These thousands and millions of little field laborers, always burrowing, always feeding and making nests, their help year after year to Mother Earth is not small!

Another very useful worker, which might be called nature's health officer, is the beetle. They bury the filth, dead bodies of animals and insects.

We see that in many ways our laborers keep our earth clean and a fit place for man.

These are only a few of our field laborers, and we find that man must look for the assistance of nature's field laborers, and must acknowledge that our soil has been made inch by inch by them.

"THE PLEASURES AND ADVANTAGES OF FARM LIFE."

BY MRS. A. H. SCHEID, HURON, OHIO.

[Paper read at the Farmers' Institute held at Milan, Erie county, February 4, 1908.]

Why so many of our farmers are unwilling to consider themselves every whit the equal of the man of the city seems very strange, but I presume we have so often been met with ridicule on the part of our city brethren, that we have allowed ourselves to slip into the background. I fear it is often our own fault, rather than those whom we allow to taunt us, that this condition of affairs should exist.

Today the city man of education and broad mental capabilities does not hesitate to voice the assertion that the farmer's position of the present time is far more to be envied than the inhabitant of the city, be he capitalist or the man of more moderate means. For though we have our complaints, and they are not imaginary ones either, especially during seed time and harvest, when work is in abundance and the laborers are few, yet nowhere in the scientific or mechanical world has there been more rapid strides made than in agriculture, and we are in a measure more capable of solving this problem, to a certain extent at least.

The enterprising farmer of today makes haste to acquire all the new, labor-saving machinery, which go to make the life of the farmer more independent of the long retinue of laborers heretofore needed. We realize, of course, that these require the investment of considerable capital, but when one considers the wages asked by the farm laborer of today, the man who invests in a manure-spreader, gang-plow, hay-loader and side delivery rake, certainly has the wages of one man saved to go toward the payment of these implements, and with a little forethought and shelter after one has finished using these tools for the season, they will last for some years. And here allow me to say that too many farmers imagine they are economizing by saving the money they could erect a building with, and so expensive farm machinery is allowed to wear and rust away in some convenient fence corner, where sometimes the weeds are allowed to grow over and around them, and the owner little realizes what a heavy penalty he is yearly paying for his carelessness.

While, on the other hand, the farmer of enterprise and thrift is not satisfied or contented to be merely the owner of a farm, yet he bends every energy to make it an attractive and cheerful home for his family, that even the expensive, modern, up-to-date, city home fails to compare with. Yes, I do not hesitate to reiterate the fact that though a home may be palatial in its architecture, grand in its surroundings, a city home still has the grime, the dust, smoke, the restraints and the false pretenses of the cities, while we, on the other hand, in spite of labor and hard times, can always enjoy the clean, bright environments and pure associations of our farm life.

A score or more years back and there was little else than drudgery for the young people on the farm. To be sure, there are such homes even now to be found, but we are thankful to say they are diminishing rapidly, and the farmer whose complaint that his large family of sons and daughters have all deserted the old home for the vicissitudes and temptations of city life, have not very far to look for a palpable reason therefor.

We all know there are country homes so wretched, so devoid of all comforts, that it causes one to shudder, and yet the surroundings are not always to blame. The chances for happiness are to be found everywhere, but too often they are sinfully trampled upon. And then, often, a father does not stop to think that the ambition and energies that he boasts of in himself are impregnated into his sons as well, and though he may not stint them in pocket money, he fails to give them the right training to hold them on the farm.

I assure you it is far more profitable to give your boys a plat of ground, and even devote a little of your own time thereon, or interest them in the stock by giving them a lamb or calf or colt, and if you encourage them to sum up their assets, at the end of the season, you will be surprised how much more interest they will take, not only in their own values, but yours as well. Be not like so many who allow it to be the boy's colt, but claim it as the father's horse, for this will dampen his energies and lower you in your boy's estimation. He will feel that there is a want of truthfulness in your nature that alone could tempt a father to take so mean an advanage of his boy. The boy of mettle and grit will not be treated thus, longer than he finds it necessary, but will seek another field of labor.

Frequently our city friends look for happiness in the size of the house or the style of the architecture or the richness of the furnishings, never thinking that the true happiness of a country home is the contentment, freedom and love which permeate the household.

For must we not all admit that the glory of our home circle is the more manifest in the dead of winter, when the whirl and buzz of farm activity comes to a standstill, and the farmer, somewhat relieved from the pressing duties and responsibilities of the farm, is content to rest from his labors and enjoy the close companionship of his family?

What pleasure for the farmer and his wife to view the well-filled mows and bins, the active, well-fed horses in their stalls, the sleek-coated cattle grazing in the meadows, the sheep feeding in the wood lot, and the pantries and cellars overflowing with good things to eat—all in readiness for the long winter rest.

Can one imagine a pleasanter picture than the farmer of today, enjoying his daily mail, doing his business over the telephone, his home fitted up with all the modern conveniences that the city can boast of, as far as heat, water supply and lighting plant can make it so? His children are happy and cheerful, for their duties, though not strenuous, are such as to give them no time for discontent and frivolous thoughts that so frequently are to be found in our city children, due to dissipation and want of necessary exercise.

Too often have I noticed the tendency of many of our matrons on the farm to allow their daughters to think that work which mother considers her daily task is entirely too far beneath them to perform. This idea, if allowed to grow, will so corrupt our households that our sons will find it necessary to battle through life with a "help eat" instead of a helpmeet, whose only qualification will be a college certificate based against actual knowledge of what a wife's duties consist. In regard to this, I hope you will not infer that I am opposed to giving our daughters the best eduation it is in our power to give, but the idea that so many parents conceive that the household duties are too menial for their daughters is ridiculous in the extreme, and should receive the condemnation of all who are opposed to the frequency of the call to the divorce courts. I fear that too often ignorance and want of experience are the fault. We should give our children every possible educational advantage, but at the same time interest and hold them to the farm, and after so doing, if one should still show a distaste for farm life and have a tendency to follow some other calling, it is then our duty to help him follow his natural abilities. It is customary to speak of the independent farmer, and that his occupation is the safest in the world.

This fact has certainly found abundant proof during the money panic, which has shaken the foundations of trade and stocks to their very centers in the last few months, and though banks have trembled and stocks have crumbled and fallen, factories have shut down and many laborers thrown out of employment, the farmer, indifferent to the watered stock of Wall Street, continues to feed and water his stock, at the same time wondering and speculating as to "what that bunch of critters will bring him at the end of the season."

Yes, the farmer holds within the hollow of his hand, as it were, the granaries of the world and the destinies of its people. He enjoys the necessities and comforts of life, and if he desires a holiday, he needs only to consult his own interest, while men of other professions will, if at all, have to leave some very important business, and so, with minds intent upon business, only half enjoy their holiday. A farmer is under obligation to no union, so he can begin work and quit work as he pleases. The farmers are a nation with resources so great, that even in the present money stringency, they do not find it necessary to curtail expenses, even with one luxury, while many a man of the city, who heretofore has had a liberal allowance, is today searching for employment to get the common necessities of life for his family.

Who is there on the broad battlefield of life that stands out in bolder relief than our country boy? The greatest men the world has ever known passed their boyhood days upon the farm. If we look up the annals of history, we find George Washington, of Mt. Vernon, Thomas Jefferson, of Monticello, Henry Clay, of Ashland, Daniel Webster, of Marshfield, Abraham Lincoln, whose childhood and youth knew no surroundings other than those of the rude log cabin of the pioneer; James A. Garfield, whose early training was obtained in the shadow and sunshine of a farm home, and even Theodore Roosevelt, we read of as enjoying the muscular work in the hay field after the heavy cares of the presidential chair are left at Washington, for the summer's rest on his farm at Oyster Bay. All these are conspicuous examples of men of broad, intellectual minds, who not only cultivate their mental capabilities, but their farms as well, and find real pleasure in their rural environments. And not only these, but many leading men of America and other nations, when wearied with the treadmill of business, have turned to the country and the farm home, glad to lay down the worry and cares of office or bank, stock market and even congressional halls, for the peace and rest that can only be found on the farm.

The farmer gazes at his fields of waving grain with a sigh of relief and feels his heart grow light and his step seems quicker, as he looks forward to a bountiful harvest, and he turns with a feeling akin to pity at the bustling cities, the din of commerce and the cramped life of the inhabitant of the city.

More and more the world is coming to realize its dependence on the farm, not only for farm produce, but for its product of strong, resourceful young men and women, so many of whom have gone forth to serve their country in the highest places and most honored positions it has to offer. Every farmer's son and daughter may aspire to the highest, for they can feel that they have enjoyed the most refining influences, the purest, the noblest and the best environments that God can bestow on nature's child—the farmer.

In this broad field of earthly battle,
If there's carnage or if there's strife
In the heart of town or city,
What can compare with the farmer's life?

If it be the one who labors
Or the pompous millionaire,
Or the one who frets and worries
Or the one who does not care—

There are none whose lot are fraught
With fairer hopes and bright desires,
Than we who live the simple life
Of the farmer and that to which he aspires.

"INFLUENCE OF FARMERS."

BY MRS. H. H. HUBBARD.

[Read at the Farmers' Institute held at Alexandria, Licking county, December 2 and 3, 1907.]

Did you ever think that the largest proportion of our population is engaged in agricultural pursuits, and their products form the chief elements of our national commerce?

Without the farmer, our railroads, our banks, our workshops, our manufactories would be idle and worthless. Embarrass the farmers by unwise legislation, a loss of crops by war or any of the various evils which may become widespread, and all other interests, state, national and individual, suffer correspondingly. Let the farmer thrive and all other public and individual interests, dependent upon a healthful state of trade, thrive and flourish with him.

The farmers are the chief builders of our national greatness, and if they saw fit to exercise their influence by united and combined action, they could subordinate the public interest to their own. And yet, we find that the influence of farmers in our public affairs has been exceedingly small. Not only have they not bent the policy of the country in the direction of their own interests, but they have not even prevented that policy being bent in a direction contrary to their interests.

There were in 1870, 41,106 lawyers in the United States. We can safely say that one hundred lawyers have exerted more influnce in the nation than have all the farmers. There is no objection to the lawyers. They are a useful class of men; but there should be a decided objection to allowing a mere handful of them to mold the policy of nearly 90,000,000 people.

That only is a republican form of government in which they who are entrusted with political franchise exert an influence somewhat proportionate to their numbers.

The modern caucus is no friend to republican liberty; and the blind following to a mere party name is full of danger. We have looked with approbation and hope on the efforts of the farmers of this vast country to organize themselves into a body, with a view to promote their interests as farmers and citizens, to secure, independently of the old parties, the political influence that is pre-eminently their due.

Why are the city office-seekers forever patting the farmer on the back and picturing him as a saint, if they did not feel that his influence is widespread. A farmer can be just as mean as a coal baron or a railroad magnate, though, happily, his meanness would not touch so many people.

Farm life gives a man and his family the chance to develop in the most natural way. The farmer who is true to his calling and to his advantages, is the best citizen in the country. I did not say the richest or the most influential, but the *best*. There are some who say that when we demand the common rights which belong to the farmer, we are preaching revolutionary doctrine. I think not. He merely demands his own. It sometimes happens that a public man takes a position which is directly opposed to the best interests of the farmers. He may be a strong politician, and has reasoned shrewdly that there are no forces among farm organizations strong enough to injure him. Thus he feels secure, and ignores the protests of the farmers. Who is to fight the battle of the farmers in such a case? Why is the man who works under cover any wiser or better than he who works under the open sky? Why should the townsman consider himself superior to the farmer?

In some way, certain people have come to think that he who stands in a dusty shop or sits behind a desk or counter is of a higher type than he who works with his feet in the soil. Strange, isn't it, that the man who crawls off and narrows himself down to the brick and stone of the town should think that he is better or nobler than when he trod the hills. Think of the one who has brushed the last speck of soil from his clothes presuming to step above the man who works in direct partnership with God. The thing seems preposterous, and yet some farmers help to make this sentiment by acting as though they were ashamed of their calling. The business of farming is dignified only by farmers themselves.

I pity the man who walks this green earth as a farmer or any other profession and who cannot look through the beauty of the scene and behold God in the unseen.

Did you ever stop to think that the farmer is the one to whom was entrusted the power to carry out God's plans of creation?

The age has come when farmers, not by reason of isolation or lack of information, should not be backward in enforcing their claims—when they believe that brains and character are not inoculated into a man's head through a stove-pipe hat We sometimes meet one who seems to think so, but their numbers grow less.

Rural mail delivery, telephones and good literature are bringing farm homes closer together and teaching lessons in character building that few of us are able to estimate. We are told that the telephone has not been permitted in some foreign countries because the rulers fear it. It is possible to keep the telegraph largely under government control, but this would not be possible with the telephone. Once give the people the chance to speak freely over the wire and they are brought together by mutual strength. Individuals do not know their strength until they can reach across the distance and touch each other. The telephone wires which have been stretched across the country from one farm house to the other have done far more for the farmer than those who put them into use imagined they could do. Civilization seemed to be running from the farm to the city, now the wire holds it fast. With these the farmer feels he is in touch with the best in the market or in society. In foreign countries the safety of the rulers often depends upon keeping the common people ignorant of their power. In this country, our safety lies in keeping the people informed and contented.

The time has come when we should have laws to protect the farmer and his interests. One especially that I would like to mention to this gathering of intelligent farmers is for the protection of our timber. Every thinking person in the United States has been astonished and pained at the rapid decrease of the fine timber which once adorned our valleys and hillsides. Forest laws exist in the majority of European countries, laws by which the felling of timber is kept within due bounds, and which also make it obligatory upon owners of forest land to plant trees in place of those felled. By the latter simple and far from burdensome requirement, provision is constantly made for the future. We have thousands of acres in this broad land of ours that could be made to yield a handsome return if planted in timber, which at present yield no profit and are an eyesore to the beauty of the landscape. Trees are indispensable to our comfort, for they act as a barrier against the excessive force of the winds, attract the rainfall and assist in retaining the moisture of the earth. This question will come up in the near future, and who will settle it? Will it be the farmer or those high up in life, known as grafters?

Do not be hired to go to the caucuses. Value your influence high enough when the candidate comes around in the fall, to put the one in office who will best serve the farmer and his interests. With the excellent farm papers we have in these days, there is no excuse for the farmer not being posted on his political duty. Every phase of farm life is well cared for: the home life, political life and the higher life as well. Every now and then we read of students at our agricultural colleges who want the name changed. That word *agricultural* hurts their feelings. They would probably feel insulted if they were called farmers, though the greater insult might be to the profession of farming. What is the matter with such young men, any way? Who is to blame that they are ashamed of the noblest and oldest business on the face of the earth? Can it be that those who teach have lost the true spirit of agricultural education, or is it the fault of fond, but misguided parents? Whoever is to blame, the fact remains that such students do the cause of the American farmer more harm than good.

Farmers, you are the guardians of this God-established business. See to it that you discharge your trust in a manner pleasing to your Master. The God of Nature established farming and set it at the head of all industries. The pioneer centuries ago cut a hole in the forest, built his home and began his struggle for food. His clearing was small, the trees around were high, and the shadows that brooded over it were deep. Life seemed to be narrowed into a little square. How proud were those men, when they had fought the wilderness successfully and cleared the land. But had they any more right to be proud than their sons or grandsons, who, amid all the changes of industrial and social life, had held the farm true to its old-time traditions? In some cases it has been harder to adapt the farm to the changes that have gone on all around it than to cut out the forest trees. Farming today requires more intelligence, a quicker insight, more patience and a surer grasp of details than ever before, and it seems to me it is time for the farmers to have something to say about the tendency to bring everything into the hands of the few. Nearly everything brings up in the hands of some combination. But it is encouraging to note that the farmers are beginning to wake up and plan for themselves. Then the rascals who have grown fat on your weakness may turn their talent in some other direction.

Some business men, who have talked much and long about the country's prosperity, are annoyed because working men are calling for higher wages. If the general prosperity was as great as we were told, surely all classes should profit by it. So far as the farmers are concerned, they are always best off when the working people are best paid. A dollar gets to the farm home quicker through a working man's pocketbook than from a millionaire's safe. Farmers, be close students of these different conditions that come up. Don't let some one else do your thinking. Use your influence. While you are following the plow, you have much time for reflection. Do not sit down and fret. Be like the lanky native that the tourist interviewed. "You look happy," said the tourist. "Could not be more so," was the reply. "Didn't the lightning strike your place?" "Yes, hit the wood pile and split up enough wood to last six weeks." "How about the cloudburst?" "Oh, that saved the old woman a week's washing. Hung out the clothes and the water did the rest." "But the earthquake?" "Well, that saved some work; churned all the milk into butter." "It must have been a good deal of a calamity when the water overflowed your corn field that wet season?" "Not so terrible. When the water went away it left millions of fish behind. I let them stay there for fertilizer and raised the largest crop of corn .you ever heard of. Nature is man's greatest help, stranger."

Make the best of these adverse circumstances when they come. When the time comes to vote on the questions nearest you, take your pen and vote with a postage stamp first. Get a clear idea of what you want and then tell your story to those who represent you at the state and national capital. A strong letter may be more effective than a vote. Lick a stamp anyway, for the farmer's rights. When a few farmers are able to hold back a great nation for nearly three years (as in the Boer war), there is hope for farmers elsewhere who must fight for their rights—not with powder and shot, but with argument and ballot. Keep up with the procession!

"We can stand the smart of yesterday,
Today's worse ills we can drive away;
What was and is brings no dismay
For past and present sorrow.

"But the burdens that make us groan and sweat,
The troubles that make us fume and fret
Are the things that haven't happened yet;
The *pins* that we will find tomorrow."

"THE FARMER."

BY C. L. REEDER, CLARKSVILLE, O.

[Read at the Farmers' Institute held at Clarksville, December 9 and 10, 1907]

"Happy the man in busy schemes unskilled,
Who, living simply like our sires of old,

Tills the few acres which his father tilled,
Vexed by no thoughts of usury or gold."

Farming is the real business of the world. Of all the toilers who make life possible and make it sweet, the farmer stands first. The farmer's part in the great play of life is of such supreme importance that from the beginning of history to the present time, we find it honored by all thinking men.

The farmer's history is not written by the great historians, but it is written upon the fields which he tills. The farmer, in the true sense of the word, is the ruler of the world, for were it not for the farmer, the other great enterprises of the day could not exist.

The farmer is a never-graduating student of nature. From the beginning of one year to the next the daily problems which confront him are, with few exceptions, governed by the laws of nature.

Farming as an occupation is very laborious, but the man who takes the right kind of interest in his work finds a great amount of enjoyment which more than counterbalances the difficulties. It is the uninterested, so-called farmer who sees the dark side of his lot.

"The plowman, though he labor hard,
Yet on a holiday,
No emperor so merrily
Does pass his time away."

The farmer of today is confronted by many problems of which his grandfather of seventy-five or eighty years ago knew nothing. Then, the crops were planted in the virgin soil and, being protected from the cold winds in winter and their drying effects in summer by the large forests, were brought to maturity with a moderate amount of cultivation. It is different with the farmer now. He plants his wheat in the fall, using commercial fertilizers to supply the plant food which has been taken from the soil by unwise cropping; then he watches the effects of the cold north wind until spring, when, if it has not been harmed during the winter, it is in danger from the dry springtime which we sometimes have. To reduce the drying effects of the winds in summer the farmer has found that by constant and thorough cultivation of the soil he can break up the capillary attraction, thus preventing a great amount of water from reaching the surface, to be absorbed by the wind.

The strictly up-to-date farmer is an educated man, for farming or agriculture is an art based upon several physical sciences. In one sense it may be called an applied science, or rather an application of several sciences. When a person masters these sciences, physics, chemistry, geology, botany, physiology and several subdivisions of these, he has an education equal to, if not superior. that of the great professors, because the education of the farmer is acquired by practice as well as theory.

It is a great deal of satisfaction to the farmer if, when he pumps water with our common lift-pumps, he understands why the water rises in the pump stock; or, supposing his land has come to such a state of acidity that it will not grow clover and the other legumes, if he is aware that an alkali neutralizes an acid, he can apply the alkali, sweeten his soil and thereby accomplish something that would not be possible, were he entirely ignorant of chemical action.

We could go on through the list of the natural sciences naming examples which the farmer finds before him every day; simple when he is acquainted with the laws that govern them, but very difficult to understand without such knowledge.

The agricultural colleges are receiving more interest from the farmers every year. The colleges are planning the courses so that the older as well as the young farmers may receive much benefit by taking advantage of the training offered.

Let us take a glimpse of the conditions under which the foreign farmer works. In Sweden, a country whose southern latitude is that of mid-Labrador—fifty-five degrees—and whose northern boundary is only twenty-one degrees from the north pole, farming is the chief occupation of the entire country. The most remarkable thing about Swedish farming is that it exists at all.

More than half the five million inhabitants of Sweden earn their living by agriculture. In a good year, sufficient produce is raised upon the farms to feed its own people. The chief crops of Sweden are potatoes, oats, rye and wheat. The staff of life in this northern country is rye bread. It is not made in loaves as our bread, but appears in the form of great, round, hard biscuits. These are thin and usually about three feet in circumference. They have a hole in the middle and are frequently strung on a pole and hung overhead from the beams of the kitchen, ready to be broken off and eaten day by day.

The Dutch have farmed the fertile marshland on the Rhine delta for more than two thousand years. Small as their country is now, it was originally a good deal smaller. Slowly and with much patience the farmer of the Netherlands has created the fields he calls his own, not as the pioneers of America did, by cutting down large forests, but by incessant labor in driving back the sea. Behind the mud walls—the dikes—and deep below the level of the sea the Dutch farmers have their homes and farms where their fine, fat cattle graze secure; secure now, but not so in former times, for the restless sea has burst through and ruined the whole country, but the Dutchman crept back and began again.

Wheat, barley and rye were grown extensively, but the wealth of the soil lay in its pasture land. Dairying is extensively carried on, and the Dutch cheeses have become noted all over the world.

The farmer of Denmark has come to realize that intensive farming pays. He has abandoned the wasteful methods of the past and by so doing is improving his land year by year. In Denmark there are organizations for the purpose of encouraging the small farmers. These are encouraged by the more influential farmers to keep better stock, make clean milk, and to feed their stock well. In case of need, money is loaned for this purpose.

Co-operation is an important factor with the Danes. Their products are gathered up by local associations and everything is marked according to quality, also with the name of the farm from whence it came. If we Americans did the same it is reasonable that we could have a better and more uniform market for our farm produce. But the chief factor in the prosperity of Denmark is the mental alertness of the people. They lack the conservatism that so characterizes the most of Europe. They are very eager to take hold of new things, especially American.

The farmers of England, France, Scotland and other parts of Europe each take an active part in the farming of the world. After all has been said and done, we Americans love our own country and farms, although some of us have not come to realize that the method of farming we now practice is ruining our farms more each year. It took time for the people of Europe to see their mistake and so will it for us. But each year our farmers will come to realize that intensive methods pay best in the end. They will find that their farms, like living beings, will become starved unless well fed and properly cared for.

The home life of the farmer is steadily improving. With the modern conveniences, electric railways, telephone, free delivery, etc., his home is as attractive as that of his city cousin. The conveniences are ever increasing, and such persons as Miss Jane Addams and the Rev. Frank N. White, of Chicago, who paint the dark side of farm life, not from facts, but from imagination, will find that they can learn something by coming to the country to study the home of the farmer. They will then find what mistakes they are making when they compare country life with that of the city slums.

"THINGS THAT MUST BE DONE."

BY MRS. W. E. SCOTT.

[Read at the Farmers' Institute held at Montpelier, December 6, 1907.]

Someone has said: "The only things that get done in this busy world are the things that we think must be done." The wisdom of this statement is not, at first, striking; indeed, we may be inclined to doubt its truthfulness, But the more we ponder over it the more we are convinced that it is *very truth*, and that it has great bearing on our lives.

Are we satisfied with our lives? Is our womanhood bearing the fruit promised by the flower of our youth? Is our field of usefulness widening as the years go by? Are our bodily and mental powers developing? Are we doing every day some work that the moth and rust of time cannot destroy? If we can answer each of these questions with a hearty "Yes" all is well with us, but if we reluctantly answer "No," then there is something wrong with our list of things that must be done.

In the grammar of time there is no such comparison as "time, more time, most time." There are twenty-four hours in a king's day, twenty-four hours in a beggar's day. There were twenty-four hours in Harriet Beecher Stowe's day; there are no less in yours and mine. In the matter of *time*, we all stand on an equality. As to the use we should make of it there is a diversity of judgment, and that judgment makes the difference between the woman who achieves and the one who only dreams of achievement.

The true test of economy is the balancing of the outgo and the income. Could we always strike this balance in dollars and cents we should pay more heed to it, for the startling figures of the cost, the outgo in time, strength and nervous force, would call a halt, and our list of things that must be done would be revised, because our views would be radically changed as to the things that are worth while.

We should find more time to talk with our children, read with them, study with them, *enjoy* them. We should prefer to keep up in music rather than make the handsome piece of battenberg or hardanger that adorns our piano; to take a walk and a few simple exercises each day to keep our bodies healthful, graceful and young; to have a few cobwebs on our walls rather than in our brains. Embroidered center-pieces, chicken salad, angel food and ice cream, card parties, pink luncheons and nine-course dinners, with a day of every week consecrated to the making of fashionable calls, would lose their charm for us; they would not stand the test of economy.

Let me say right here that the writer of this paper does not claim to be practicing what she is preaching, but she is convinced more and more, as the years go by, that there is something wrong. Time goes on and on *not* bringing the results she hoped for. The *cost* in time, strength and nervous force is altogether too much for the *income* in the way of self-culture, home joys and the betterment of the world.

Suppose every woman's club in the land should take for its course of study next year, "The things we must do for our town." What a civic revival there would be! Suppose every wife and mother should ask herself, "What are the things I must do for my husband and children?" What a smashing of old household gods would follow! We should no longer be doing certain things and doing them in certain ways just because our mothers and grandmothers did so.

As many of us here are parents, let us make this a practical talk, one suited to our needs. Our housework must be done, dishes washed, floors mopped, meals prepared, rooms kept in order, sewing and mending done—where can we draw the line? How simplify this work that we may have time for other things worth while? What things must be done? What things had better never be done?

It seems to me that *Home Sanitation* has the first and strongest claims on housewives. Woman is the guardian of the health of mankind. She is not divine, she cannot perform miracles, but she can, by good sanitation, destroy germs and thus prevent disease. Let us note some common unsanitary conditions and see how many of these we are allowing to exist about our homes. A *back-yard* which has become the fighting-ground for the bacterial crops from dishwater, washwater, *standing water*, with its micro organisms, the old rain barrel at the corner of the house; a damp, undrained *cellar*, with decaying vegetables and poisonous gases; a *well* toward which the ground slopes, receiving more or less of the drainage from surrounding outbuildings; an unused *parlor* and "spare" room, always closed, always dark and musty; dark *closets;* dark *corners;* the space beneath the *kitchen sink* enclosed by boards; a wet, sour *dishcloth*, which is never rinsed, scalded or dried from one week to the next; and one of the best of germ breeders, *little* or *no ventilation* in sleeping rooms at night.

Here are *eight* of the most common causes of sickness. A *good drain* remedies four of them; a judicious use of sunshine, fresh air, scalding water and common sense does the rest. Doesn't it seem simple? Sunshine, fresh air, a good system of drainage, plenty of scalding water! Surely these are within the reach of everyone of us. Now, if in addition to these precautions, we *burn* all *refuse* that cannot be utilized, what is there in the way of our enjoying three of the *prime requisites* of good health—*pure air, pure water, pure soil?*

How many of us are careful to save steps? Some one may say, "Oh, I enjoy my housework so much; it is no drudgery to me—a few steps more or less don't matter. Yes, they *do*. If a man buys a piece of machinery and pays for it with his own money, he has a right to wear it out just as soon as he chooses. He can replace it. But no man or woman has a right to use the body God has entrusted to him or her in this way. Who can replace the care, the companionship, the influence, the thousand things which make up our value as human beings? It is our duty to God and to our family, to our friends and to ourselves to make our lives as useful, quiet and peaceful, as free from impatience and fretfulness as possible. Count your steps some morning while preparing a meal and washing the dishes. Twenty-six hundred steps make a mile. Perhaps you'll be surprised to see how many miles you travel in preparing the meals for one week. If you can make *two* steps do the work of *three*, there'll be a saving of 33 1-3 per cent. Any merchant would seize such a saving with alacrity. Don't we need it as much as he?

Are we as careful as we might be about the *positions of our bodies* while we are doing our work? Are our washbenches, worktables, sinks and ironing-boards *high* enough, or are they so low that we are injuring our backs bending over them? Are we careful to walk, stand and sit properly, thus bringing the heft of the different parts of the body in proper relation to the muscles which should support them? The "aging" of the body is not a matter of years, it is rather a matter of condition, and the way one habitually uses that body largely determines what its ultimate condition shall be. You remember the wise old saying, "Make your head save your heels." Let me give you another one: "Make your arms and legs save your back." Nature's bending points are the hips and knees. Too often their work falls upon the back. If in standing and walking we rest the weight of the body on the balls of the feet, keep the chest out, the abdomen in, head erect and practice deep-breathing, and *persist* in these till they become *fixed habits*, we all not only gain much in health, but in appearance. The climbing of stairs by women and girls is generally considered a harmful thing, and yet there is hardly a more beneficial exercise than this very one, provided the proper muscles do the work, and the clothing does not interfere with deep breathing. Poor health and low spirits usually go together. If our household duties seem drudgery, it is generally because our vitality is at a low ebb. We are not having the abounding health and exuberant spirits that might be ours if we would persistently cultivate correct positions while walking, standing, sitting and going up and down steps. All these things might be made to conduce to health and happiness; as it is, not one hour out of the twenty-four do our lungs have a chance to properly expand, even when we walk or stand; and when we *sit*, our stomachs are literally crowded out of "house and home." Let us put physical culture right in our everyday housework. It is one of the things that must be done.

And now about the laundry work. Physicians claim that there is more fresh air held in the meshes of sun-dried articles than in those that are ironed. The main thing with fully one-half the articles in the wash is to have them *clean* and *sweet*. Then why not fold these pieces as we take them from the line, and lay them away full of sunshine and fresh air—dishtowels, sheets, everyday pillowslips, knit underwear, wash towels, stockings and night gowns? It may require considerable willpower, but *try it*, and use the time saved in reading from a favorite book, conversing with a friend or watching a sunset. It will be a distinct *gain* to you. The non-ironing system has many arguments in its favor. Look them up; fall into line!

Two of the most harmful things on our daily bill of fare are pie and cake. Yet what a vast majority of us think we have not done our duty if we have neglected to furnish our families these prime favorites every day. Let me refer you to Mrs. Rorer's article in the May number (1906) of the Ladies' Home Journal, "Why I Have No Pies or Cakes on My Table." For years she has studied and taught the chemistry and value of foods. I know of no better authority on the subject of good food and its correct preparation than she. Read her convincing statements and then conclude that the making of pies and cakes is *not* among the things that *must* be done.

Almost everyone of our home magazines of today is carrying on a sort of crusade against bad taste in home furnishings. They insist that the numerous little pieces of bric-a-brac which require so much time in dusting be put entirely away; that the curtains and portieres be draped in the simplest manner and hung free from the floor; that rugs be used in place of carpets; that no room in the house be too good for everyday use; that the best furnishings are those of substantial outline and simple design. All this means a saving of time and labor to the housewife.

And now we have spoken of home-sanitation, the saving of steps, everyday physical culture, simpler laundry work, simpler and more nutritious food and simpler home furnishings. Suppose we use a little of the time thus saved in studying one branch of child-culture; the natures of our own children and how best to deal with them. No teacher in our public schools is considered capable of assuming the charge and government of pupils unless she has a fair knowledge of psychology—knows the different classes into which the whole human family is divided with regard to temperament and the best methods of dealing with each. Certainly it should be a part of every teacher's education. Ought it to be any less a part of *yours* and *mine?* There are certain laws to observe in managing certain natures. How many of us know them? There may be some exceptions to these laws, just as there are in the physical world. In dealing with our boys and girls, we are dealing with "soulstuff," and any study that we can follow, any help we can obtain to make us wiser, more capable parents, ought to be among the first in our list of things that *must be done.* We cannot expect that psychological laws will be suspended in the case of *our* son or *our* daughter any more than we can think of putting *our* hand into the fire and expect the fire *not* to burn it because it is *our* hand. We carefully fit ourselves for every other vocation in life. It seems to me that every woman who marries ought to consider the vocation of housewife and mother *hers* primarily, and to fit herself for it. But because it is largely a matter of *self-culture,* it is neglected. And there comes a time to most of us when we seem helpless; when our children have reached an age at which they must or *do* act and decide for themselves. Then *we have time* to think back over the years, of all our mistakes and shortcomings. We can only advise and pray and *wait.* Happy are those parents who can feel at such a time that they have done their best—their very best—in bringing up their children and molding their characters. How many of us have that assurance?

I spoke in the beginning of the World's Work, and hinted that some of it belongs to every one of us. I believe it from the bottom of my heart. There may be some years of our lives in which every minute of our time, almost every thought and all the labor of our hands must go to those in our home. It is right that they should. They have the strongest claim on us. But there comes a time to almost everyone, sooner or later, when the home cares lessen, more time is ours, and the temptation comes to follow certain lines of enjoyment, work or culture from the standpoint of *self.* But the noblest woman is the one who puts self aside and gives a part of her time, energies and talent to the *world's work.* It comes to everyone of us, for there isn't a town, city or community but has its needs. You and I are placed in the scheme of life just where we ought to be. What comes along is for *us to do.* This is a world for work. Let us cheerfully do our share toward making the world better. The Civic Improvement and Beautiful America Clubs, reading rooms and gymnasiums for boys and girls, public rest rooms, the different departments of the W. C. T. U. work, all need us. Let us "fit in" somewhere along the line and do our part.

And now a moment's time to self-culture. I do not speak of that self-culture which comes to us from reading and study, either by ourselves or in the numerous study clubs. The most of us avail ourselves of those opportunities and need no urging to do so. But I speak particularly of the culture of our inner selves—perhaps *soul culture* would be a better word. I mean the overcoming of the worry habit, the control of thought, the attainment of perfect poise of mind and tranquility, the steady working forward and upward to our ideals until we possess the best of this world's gifts—"the peace that passeth all understanding." How many of us are victims of the worry habit? The wrinkles caused by this habit are the best lodging place in the world for the germs of discontent and unrest. We all admit that it is a foolish, useless habit. We all know that troubles usually go where they are expected; that we seldom worry about the right thing, the right person or the right situation; that nothing so takes away the joy of living, so draws on our stock of cheerfulness and nerve force as the worry habit. Yet we go on indulging in it, spoiling our lives and the lives of those about us. We become chronic "worriers." It requires will-power—100 per cent. of it—to overcome it; it must be done by controling thought. We *can* reach certain conditions by thinking ourselves into them. We must think ourselves into happiness. It is possible to cultivate the habit of meeting life's problems cheerfully, to look on the bright side of things. I don't mean that we are to ignore our responsibilities, but after we have worked and planned and done all in our power to avert a threatened evil, then do not spend sleepless nights and anxious days because our hearts are full of fear. We often trust our lives in the hands of a ship's crew or of a train engineer, and sleep soundly until morning; yet we are unable, many times, to trust our welfare and that of our dear ones *over night* in the hands of "Him who, watching over Israel, slumbers not nor sleeps." We are distrustful of the Almighty upon whom we profess to rely. We should not like to betray such an utter lack of confidence and trust in an earthly friend. Why not lay down our burden of anxiety at the close of the day and slumber restfully, realizing that our refuge is the Eternal God, and underneath us are the "everlasting arms?" Then shall we be able to meet the new day with a stronger heart, a clearer brain, steadier nerves, and possibly a stock of good cheer—all essentials in fighting the world's battles *well*. We cannot deny that there are shadows, but you and I can elect to live in the sunshine; we can choose what shall be the atmosphere of our lives. Then let us set about it. We can, if we will, think ourselves into happiness; it is not only our high privilege, but our moral duty. Let us hold each day fast and not let it go without its share of joy. We are told that we ought to chat with a friend, read from a good author, look at a fine picture, catch a glimpse of the sunset or hear beautiful music every day of our lives.

Did you ever meet a person who has acquired this tranquility, this peace of mind? Did not the *face* of that individual carry its own "Pax Vobiscum?" Did you not feel the benediction of that noble soul resting upon you while you lingered in its presence? Is not that the one person whom you envy more than the one who is a great social success or who possesses immense wealth? And yet it is within the reach of everyone of us who is willing to make the effort and consider its acquisition one of the things that *must be done*.

In conclusion, let me read a favorite of mine, Henry Van Dyke's "Guideposts on the Footpath to Peace:"

"To be glad of life because it gives you a chance to love and to work and to play and to look up at the stars; to be satisfied with your possessions, but not contented with yourself until you have made the most of them; to despise nothing in the world except falsehood and meanness, and to fear nothing except cowardice; to be governed by your admirations rather than by your disgusts; to covet nothing that is your neighbor's, except his kindness of heart and gentleness of manner; to think seldom of your enemies, often of your friends, and every day of Christ; to spend as much time as you can with body and with spirit in God's out-of-doors—these are little guideposts on the footpath to peace."

"A MODERN MAGICIAN."

BY MARY E. KOLB.

[Read at the Farmers' Institute held at Harrison, December 31, 1907.]

Somehow the word magician brings before my mind the picture of a person belonging to the Dark Ages, who, with weird spells and incantations, produced magical effects. A man producing far more wonderful results with a great deal less fuss is our mighty, modern Luther Burbank.

In a quiet, unassuming way in southern California, this man carries on his work of transforming plants. He is not only eliminating bad, but protecting and even introducing good qualities into them. He is working for human life through plant life. His first production was the Burbank potato, which is familiar to most of us, since it has been raised in this vicinity for several years.

In about 1870, people were beginning to predict a potato famine, for the potato was steadily decreasing, both in the size of the tuber and in the size of the crop. Burbank, by using the poisonous seedball on the top of the plant, made this new potato, thereby increasing the wealth of the United States $20,000,000; yet this potato was sold to a local seedsman for only $150 It seems unbelievable, but he has 1,500 varieties of potatoes growing on his experiment farm at Santa Rosa, California. He is now working to produce a potato with a larger per cent. of starch, to be used in the manufacture of alcohol; so when the woods of the farmer are gone, he can still raise his fuel on his own land.

Another experiment in the potato line is the pomato. He produced this fruit by grafting a potato upon a tomato. The fruit is white and has eyes like a potato, but grows upon a vine. It has a new flavor, and is fine eaten either raw or cooked.

He has produced 100 varieties of fruits. He produced the plumcot, which is half apricot and half plum; a pitless plum; a plum having the taste of a Bartlett pear; the primusberry, a cross between a raspberry and a blackberry, and a white blackberry. One day, while yet a nurseryman, he received an order for 2,000 prune trees to be delivered in nine months. At the time he had no trees, but instead of refusing the order, he immediately set boys to work planting almond seeds. The almond grows rapidly. In a short time the young trees were ready to be budded with prune buds. By the nine months the prune trees were ready. Today the man who bought them has one of the finest orchards of prunes in California.

He also produced a thornless cactus; a chestnut tree eighteen months old, which bears nuts, and a tobacco plant ten feet high, with leaves five feet long and two feet wide.

In experimenting with trees, he produced the fastest growing tree in the temperate zone.

In front of Mr. Burbank's house is a row of walnut trees fourteen years old. They are two feet in diameter at the height of a man's head. In their 14 years they grew six times as large as an ordinary tree in 30 years. He has two varieties; one will grow anywhere the black walnut grows, the other anywhere the English walnut grows. Unlike most fast-growing trees, the wood is hard and will take a high polish. It makes furniture somewhat resembling mahogany. Just think what this means to the people of our country, for we all know the supply of walnut is fast decreasing.

Mr. Burbank does not only work to increase the wealth and dietary of the nation, he sees the usefulness of beauty as well. He increased the size and beauty of the amaryllis, daisies, lilies, roses and poppies. He has bred the calla lilly up to a foot across and down to an inch in diameter. The common field daisy, a pest of the Eastern farmers, he has changed to a queen among flowers. It is now double, dazzling white, and six inches across. He delights to work with poppies. He has so changed the size that a man can hide behind a dozen. The golden poppy of California changed to crimson under the wand of this magician; he has even produced a blue one. He says he can produce a blue rose, but this would be "To paint the lily, to gild refined gold."

The Australian star flower is everlasting. One of the largest millinery firms in the country has contracted to take all he can supply. One of the hardest things to change in a flower is its perfume. Mr. Burbank calls it the "soul of a flower." He has changed the soul of the dahlia to that of the magnolia. One day, while passing a bed of verbenas, he noticed the faint odor of trailing arbutus. On his hands and knees he went over each plant until he found the one with the odor. This he immediately separated from the rest. Year after year the right plant was rigidly selected, until now he has a whole bed of verbenas with the delightful odor of trailing arbutus, "fragrant, filling the air with a strange and wonderful sweetness."

Mr. Burbank was born in Massachusetts. From earliest childhood he showed a great love for plants. While quite young he started to work in a factory, but soon quit and started as a nurseryman. In 1875 he left Massachusetts for the more favorable climate of California, where he could work all the year around. He started with little money and he was penniless when he reached his destination. At first he nearly starved, but by dint of hard labor he secured a start. Scorned by his relatives, ridiculed by his friends, he kept right on in his chosen work, As he says, "Nature never lies," and

"Whenever the way seemed long
Or his heart began to fail,
She would sing a more wonderful song
Or tell a more marvelous tale."

His work was first recognized abroad, but appreciation is now rapidly growing in the United States. Recently, the Carnegie Institute donated enough money for him to carry on his work undisturbed for ten years. Mr. Burbank is a quiet man, dresses plain and works hard every day. He does not make enough money to carry on his work. It takes too long to obtain results, and, of course, he has failures. The nurserymen to whom he sells his products are the ones who reap the reward. Like Aggasiz, he seems to say, "I haven't time to make money." He makes no secret of his work. His methods are grafting. pollination or dusting the pollen of one flower on the stigma of another, and selecting the plants best fitted for his use. Out of a thousand plants he will choose two or three. The rest are "found wanting and burned." It is easy to understand how he does his work, but to do it is quite a different thing. You would have to have his patience, intuition and love and trust in nature before you could hope to do it.

The production with which he hopes to do the most good is his thornless, edible cactus. He has taken from the cactus all its spines and wood substances, which are poisonous, and made it good food. The fruit is two inches in diameter and three inches long, somewhat resembling a cucumber flattened at both ends. The flesh is a beautiful yellow. It is delicious to the taste. The few people who have tasted it cannot describe the flavor. It suggests different fruits to different people, or a combination of all. Like most of his productions, it has not yet been given to the general public. It must first prove that it will live in different soils and climates. Since the cactus grows in dry regions, in the desert will be found food for man and beast. All its life the cactus has been an enemy to man, hastening the death of the poor, thirst-maddened creatures who ate of it. It shall now begin on a new era of good-will to men. "The wilderness and the solitary place shall be glad for them; and the desert shall rejoice and blossom as the rose." It is good, in this age of money-making, to see one man working for the common good of all.

As this is the last day of the year, it brings the wish that the coming year may

"Ring out the old, ring in the new,
Ring happy bells across the snow,
The year is going, let it go,
Ring out the false, ring in the true."

Ring out the old methods in raising plants, ring in the new that shall take Luther Burbank's work for a pattern. Ring out false men that work for gold alone; ring in the true that work for all mankind. Ring in more men like Luther Burbank, our wonderworker in plant life, our mighty, modern magician.

"THE SOIL."

BY W. H. WALTERS.

[Read at the Farmers' Institute held at Convoy, January 2, 1908.]

Horace Greeley once gave this advice to young men. "Go west, young man, and grow up with the country!" The result of acting upon this advice is that the broad and fertile plains of the Mississippi and Missouri valleys are a veritable hive of industry, and have been made to blossom and bloom as the rose, and that nearly all the most valuable lands of our country are taken up, and we are nearing that period in our history when we must begin to practice *intensive* rather than *extensive* farming. No doubt if Horace Greeley were alive today, his advice to the young man would be, Study the soil, young man; fit yourself to utilize the elements which nature has placed within your grasp.

We are all familiar with the soil to a greater or less extent. If we were to walk out on the bare soil shortly after a rain, so that a little of it adhered to our shoes, and then were to walk into "My lady's parlor," the good housewife would immediately define it as *dirt*—something unsightly and apparently to be despised, and order it removed immediately, upon pain of her eternal displeasure, seemingly oblivious to the fact that without the soil the beautiful flowers and stately forest would be unable to rear their heads.

What, then, is the soil? How did it originate? Of what is it composed? And how is it made useful to mankind? Geologists tell us that in a remote time, way up in the frigid regions of the North, the moisture which fell in the form of snow piled up hundreds and possibly thousands of feet high, which congealed into ice; under its own pressure it broke loose from its fastenings and started on a journey toward the south. So great was the pressure that it swept everything before it with a crushing, grinding, mixing, leveling force which the hardest rocks could not withstand. And when it finally stopped, under the warm rays of the sun, it melted and left the ground fragments of various kinds of rocks as the basis of our soil. This, together with varying amounts of organic matter derived from the breaking down of vegetable and animal remains, constitute the soil of our (Van Wert) county.

Take it to the chemist and he will tell us that these little grains of soil contain different mineral elements, which are necessary for the proper development of plant growth. But before plants can properly grow, other conditions are necessary. Sunshine is necessary. Suppose we want to build a house, we not only have the stone and lumber and nails, etc., necessary, but we have the energy in the form of master builder, to properly place the different parts and mold them into such a structure as we desire. So is the sun the master builder, supplying energy in the form of warmth, so necessary for the proper germination and growth of plants. As man requires a certain temperature for his best development, so do plants require certain temperatures for their best development. For instance, wheat and rye delight in a temperature of 60 to 70 degrees, while corn delights in a temperature of 90 to 100 degrees. The sun is the great heat-producing power of the world, penetrating the soil and warming the atmosphere.

Another element necessary for plant growth is *water*. If we take a strong microscope and examine the soil grains closely, we will find that, under proper conditions, they are surrounded by a film of water. Water is the chief agent for dissolving the mineral plant food in the soil; on the same principle as sugar or salt is dissolved if placed in a glass of water.

The soil may be termed a great reservoir for storing water for the use of plants. As the water falls from the clouds in the form of rain, that portion which does not run off on the surface percolates down between these little grains of soil, where it may be held for the use of plants, or it may find a submarine outlet and flow away.

The warm sun shining or the winds blowing upon the surface soil soon dry it out by what is termed evaporation, which starts up a return movement of the water from the lower strata of the soil, by what is termed capillary attraction, working on the same principle as a lamp filled with oil, with a wick placed in the oil and the outer end lighted. The oil immediately commences to flow upward, and as long as the wick is kept burning the oil will continue to flow until exhausted. So it becomes necessary, in order to conserve the moisture in the soil for the use of plants, that some method should be taken to arrest this waste of moisture which is going on. Therefore, it is deemed advisable to plow the ground for spring crops as early as possible, or as soon as the surface is dry enough. And for such crops as require cultivation, stir the surface soil to the depth of two or three inches frequently, and as soon after a rain as possible, so as to form a mulch on the soil and to arrest the flow by capillary action.

Also the early planting of crops or as soon as the soil is warm enough, so that the roots of the plants may utilize this water which is wasting away; also that the foliage of the plants may shelter the soil from the rays of the sun and from strong winds. Also the applying of coarse manure to the soil acts as an absorbent and as a mulch.

VENTILATION.

It is as necessary to have an ample supply of air in the soil as it is of water. It has been demonstrated that soil from which oxygen has been completely excluded, seeds planted therein, in an otherwise good condition, will germinate and plants will not grow. In a soil whose pores are completely filled with water so that the air cannot penetrate, such plants as we cultivate soon sicken and die. Therefore it is a wise policy to remove the surplus water from the soil as rapidly as possible. The best method of removing it from our soil is by tile drainage. As the water is drawn off, the air comes in to take its place, not only from above, but the air entering the tile penetrates the soil from below throughout the whole system of tile drainage, thus giving very thorough ventilation and supplying the oxygen so necessary for the best development of plant growth. This is the reason why land that is thoroughly tile drained is so much more valuable than land that is not drained; for warmth, for removing surplus water and for ventilation.

We find upon examination that the roots of plants penetrate the soil in every direction to the depth of three or four feet or more, seeking food for their proper development. It has been found upon careful examination of corn planted in ordinary field culture, that seemingly every cubic inch of soil to the depth of three feet was occupied by one or more little hair-like roots, and upon this estimate, if all the roots from one stalk of corn were placed end to end and measured, they would aggregate over one-quarter mile in length. We have also observed that the roots of trees spread out to great distances, forty or fifty feet.

But let us examine the soil a little closer. We find the soil is a great laboratory, where a large variety of microscopical forms are at work breaking down dead organic matter and converting it into that form where it becomes available as plant food. It has been found that plants require different kinds of chemical substances for their growth, such as phosphoric acid and potash, etc., which are found in the soil. It must also have nitrogen, which is originally taken from the atmosphere. Nitrogen, phosphoric acid and potash are sometimes called the three essentials for plant production. There is an abundance of each, but they are not so easily available for use; therefore these microscopical forms in the laboratory of the soil are at work converting these elements into such a state that the plants can use them.

The clover and other leguminous plants have fixed upon their roots small lumps or tubercles, where minute microbes make their homes, drawing nourishment from the plants, but giving in return compounds of nitrogen, which they are enabled to produce from the free nitrogen of the air. Go into any natural meadow or natural forest and you will find some plant of the leguminous character upon whose roots these microbes make their homes, engaged in compounding plant food. Another way in which they may be obtained is in transforming organic matter in the form of humus, as leaves, grasses, etc., and farmyard manure.

Ammonia arising from the manure pile is a loss of plant food. If manure is placed immediately upon the soil this ammonia is immediately seized upon by a series of minute organisms and, by what is termed nitrification, is converted into nitric acid, and it becomes available for the higher plant life. A portion of the nitrogen is derived from the rain as it falls from the clouds. Then, looking at it in this light, the soil is not a grave, where death and quietness reign, but rather a birthplace, where the cycles of life begin anew, to run their race over and over again.

Nature is constantly endeavoring to add plant food to the soil. As the little buds on the trees and the tiny plant shoots up in the spring they open and develop through the growing season, and after having performed their mission in this direction, fall to the ground, cover it as with a blanket, decay, and is again in the form of organic matter, beginning its course over and over again of supplying the elements of plant life.

But man, not understanding how the nitrogen supply of the soil should be maintained, has shut out for many years in succession this symbolic life and has attempted to grow crop after crop, such as corn or wheat or other crops, that are only able to consume this nitrogen without adding anything appreciable. The inevitable result is that the available supply of nitrogen has been reduced below the level needful for the production of large yields. This nitrogen compounded with phosphoric acid, potash and other mineral matters found in the soil, constitutes the plant food. As the different plants draw from these elements in different proportions, it is a wise policy for the general farmer to so rotate his crops that no one element will be drawn upon to excess.

Thus we see we must have for the successful growing of plants, sunshine, water, air, and we should endeavor to supply nitrogen, phosphoric acid and potash. This may be done by properly plowing the soil so that the soil grains may be separated in a fine crumbly condition so as to admit sunshine for warmth, absorb water and allow the warm spring rains to enter and force the cold water, from the winter rains and snow, below the level of the root zone, thereby warming the surface soil. Also by tile drainage, to draw off the surplus water and allow the warm air to penetrate the soil from below; then, where possible, stirring the soil two or three inches deep, to break capillary action, conserving the water in the soil for the use of plants, and by adding organic matter in the form of manure and other matter not only for absorbing water and forming a mulch, but that it may be transformed into plant food, and by growing clover and other leguminous plants, so that the free nitrogen of the air may be made available as plant food.

With proper care on the part of the farmer to do the right thing at the right time in the way of building up our soil, we may not only pursue our calling with profit to ourselves, but hand the soil down to posterity with its fertility undiminished.

"INFLUENCE OF EARLY HOME TRAINING."

BY MRS. ARTHUR M. WRIGHT.

[Read at the Farmers' Institute held at Bellbrook December 12, 1907.]

While the "kings of the furrow" meet in annual session to discuss the best methods of caring for their live stock, their lands and farm products, it is fitting, we think, that the queens of the homes be given an opportunity to consider some things that are most essential to the best development of the products of that home.

The home, be it the well equipped, up-to date house or the simple little cottage, is the center of all farm life. In the beginning, in the home, we find the *housebond* and the *weaver*—housebond, he who binds that house together: weaver, she who weaves within that home. The combined efforts of the two will, if properly exercised, produce an ideal home. The passing of the years may bring child-life to that home. If so, there comes a responsibility multiplied. but not divided; the beginning of an influence which extends to the borders of time.

The first few years of a child's life are years of anxious care on the part of parents. How eagerly they watch the development of mind and body! How thankful for the right use of both! They think and act for the child until he begins to do these things for himself; *then* begins the training of the mind, the hand, the heart, which will prepare that child to fill to the full his place in this great world of ours. One of the first lessons in life is to teach the child to have a purpose, to accomplish something. The men of today are the men who do things, not those who whittle away their lives at some other's expense. Again, we must teach the child that he is not alone in his life work, but must come in contact with others, and very early in life must learn to "do to others as he would that they should do to him." How much trouble might be avoided if, in the home, in the school room and in the active duties of life, our actions were governed by this good old golden rule.

We insist that the child say "Thank you" for the kindnesses and gifts bestowed upon him, and yet have we not seen men and women grown old and gray, who all their lives have received their daily bread and yet failed to thank the Giver of all good things? Is this not due to lack of early home training? Will the child who has been taught the "Now I lay me down to sleep" at mother's knee forget in later years to give thanks for the past night's care and the morning's mercies?

When we teach the ten commandments are we not laying the foundation for the keeping of all the moral law? Is it not the breaking of one or more of these that fills our jails, penitentaries, asylums and almshouses? Is it not better to teach these principles and so keep the child in the right way, rather than neglect this teaching and allow him to go astray? Would it not be more economical to provide every necessary equipment in the support of our educational system in order that our children may be better fitted to become useful citizens, rather than to unwillingly furnish money, by means of taxation, for the purpose of maintaining public institutions of detention for those who, through lack of proper home training, have become law breakers? Should not our teachers be men and women who, by precept and example, may be able to strengthen the work begun in the home and who may continne to teach our children the better things of life?

In rounding out the character of the child we must teach him strict principles of honesty and uprightness. Teach him not to tell a lie to escape punishment, but to tell the truth, no matter what the cost. "Honesty is always the best policy." To be known as the man who gives just weights and just measures is far more enviable than to be known as that old skinflint whom everybody must watch.

I have left the teaching of obedience for the last thought, not because it is of least importance, but because of its supreme importance. "To obey is better than sacrifice." In teaching the child prompt obedience to the "powers that be" in the home and in the schoolroom we are teaching that child to obey the laws of the state and of the nation, and are preparing him to respond to the call of duty whenever and wherever found. In my early home was one dearly beloved by me—my grandfather—five years of whose early life had been spent in the service of his country. He knew how to obey orders and his word was law.

In that home we were taught, not by the wait-a-minute, forget-what-you-are-sent-for, leave-the-door-open rule, but by the go-quick, come-quick and shut-the-door-after-you rule. I come before you today not because of any special fitness for the place nor for lack of other duties to perform, but simply because this task was assigned me and I felt it my duty to respond.

Do we not, as parents and teachers, become discouraged and give up just at a time when we should press forward? Are not many of the youth today whose lives have become shipwrecked, the result of someone's discouragment? With due reverence, do we regard the memory of one most of whose life was spent in training young men and women for the positions of trust which they hold today over all the earth? He was want to say, that in the times of trial and discouragement which came to him, he simply forgot the day that was past with its failures, and having sought the throne of grace in the morning watch, pressed forward to the duties of the new day. Shall we not then press forward in this grand work of training young minds in the right way? For, in the words of the poet

"We must not hope to be mowers,
And to gather ripe golden ears,
Unless we first have been sowers,
And watered the furrows with tears.
Is it not just as we take it—
This mystical world of ours?
Life's field will yield, as we make it,
A harvest of thorns or of flowers."

"AMERICAN MOTHERHOOD."

BY MRS. MYRA DEERWESTER PAYNE, O.

[Paper read before the Farmers' Institute held at Payne, February 12, 1908.]

This is a subject that tenderly touches the heart of every true wife and mother. What mother does not feel a sweet thrill of joy at the thought or mention of the words? How much they mean. What a wide field they cover. What a privilege to be an American mother and have the opportunity of rearing, training and educating some of the future citizens of "the grandest country beneath the sun." Would that every mother might realize as she assumes the crown of motherhood, that it is a sacred trust bestowed upon her from heaven, and one that neither time nor eternity can take from her. It is true to nature, although it be expressed in a figurative sense, that a mother is both the morning and the evening star of life, for nature has set her upon such a pinnacle that our infant eyes and hands are first uplifted to her, and she becomes what she has been called, "The Divinity of Infancy." Maternal love is the visible providence of our race. Father may fill the memory, but mother occupies the heart. The mother in her office holds the key of the soul, and she it is who stamps the coin of character and makes the being who would be a savage "but for her gentle care," a noble man. The young man who has forsaken the advice and influence of a good mother has forsaken his best friend, has broken the last cable and severed the last tie that binds him to an honorable and upright life. If he is faithless to mother he will have little respect for wife or children. But the young man or woman who loves and obeys his mother can be trusted under almost any and all circumstances. Simmons tells us, "If you would reform the world from its errors and vices, begin by enlisting the mothers." Emerson says, "Men are what their mothers made them." Lincoln very beautifully portrayed his mother's character when he said, "All I am or ever shall be, I owe to my angel mother." These are fine testimonials to the greatest force in the world, "Maternal Influence." Might not Emerson have more clearly expressed what doubtless was in his heart if he had said: "Good, useful men are what their mothers made them?" Numerous cases might be cited to prove that many men are not what their mothers made them. We hear of very few criminals who attribute their deeds to the training received from their mothers. Boys who become thieves, murderers or lawbreakers are generally those who lose their mothers or leave them to satisfy a youthful ambition. A self-made man is very nearly an impossibility, since mothers and books have made all truly great, self-made men, so called. It is a mother's counsel indelibly graved on the tablets of memory which serves her son as his conscience. The instinct to do right is man's precious heritage from his mother, and he who cannot declare his own mother the best woman in the world is to be pitied. Everybody respects and admires a man who loves his mother, and who speaks reverently to and about her. William McKinley manifested a beautiful love for his mother, and to her, more than to anyone else he was indebted for the elements in his character which contributed to his political success.

The characters of our children are made up of little things. It is a structure which everyone is building, a great edifice going up point by point. It is a building that must stand and the word of inspiration warns us to take heed how we build it, and be sure that we have a foundation that will endure. Little acts are the test of character; they help to make the immortal man. Drops make up the sea, acorns cover the earth with oaks, sands make up the bar in the harbor's mouth on which vessels are wrecked; and little things in youth accumulate into character. The greatest men are not those who despise the day of small things, but those who improve it the most carefully. Michael Angelo was one day explaining to a visitor at his studio what he had been doing at a statue since his last visit. "I have retouched this part, polished that, softened this feature and given more expression to this lip." "But these are trifles," remarked the visitor. "It may be so," replied the sculptor, "but recollect that trifles make perfection, and perfection is no trifle." Now we are not trying to moralize or pose as a model parent, but only endeavoring to point out some facts as they appear to us. We who are called to the exalted position of motherhood should never feel that we are without opportunities in the world, but should rather know that our privileges are almost limitless. We believe that it is in the capacity of a teacher that the mother exerts her greatest influence, and we believe that obedience and industry are among the first things to be taught. Disobedience in the home soon leads to a disregard of state and national laws. If the rising generation could be made to fully believe and feel the truth of this, I am sure they would uniformly revere their parents.

Work is also a great element in character building and has always been a great factor in the education of the human race. The law of nature is, that a certain quantity of work is necessary to produce a certain quantity of good. If we want knowledge we must toil for it; if food, we must toil for it; and if pleasure, we must toil for it. Our present civilization is largely the result of persevering, well-directed, intelligent labor. The highest attainments of the human soul come only through constant effort and struggle. Labor itself, and the growth of the whole being through labor, were part of the original plan. Work demands effort, and arouses energies which quicken the whole being. It is a means to a purpose, rather than a purpose itself. We do not live to toil, although we may have to toil to live. We must get firmly imbedded in our own minds the principle that work is educating in its influence before we can use it in our child-training. We cannot give others what we do not have ourselves; and we must believe these principles so thoroughly that we will live them and act them, or the children will detect the false note in our lives and our words will go for nothing. Given the right example and spirit in the teacher, how shall we further teach the children? If we can associate with all work, first, the purpose of helpfulness to others, and second, the mastery of something, awakening in the child the consciousness of power over obstacles, we have taken a long step. We need, however, to guard this sense of mastery, not letting it run into selfish love of domination, but keeping it in subjection to the spirit of helpfulness. As food is the material on which children are nurtured, so literature is the food for developing the mind. Knowledge of good books and a habit of careful reading is a most excellent means of intelligent development. It gives mental breadth, poise and authority. In olden times, when the family Bible, the household almanac, with now and then a weekly newspaper, composed the family library, it was not difficult to select one's reading matter. It is wonderful, too, what a fund of information this limited list supplied; and it goes to prove that the benefit derived does not depend so much on quantity as on quality and the manner in which it is read. But in this age, when the world is flooded with literature of every description, good, bad and indifferent, it is sometimes very difficult to decide just how and what to select. Literature reflects the temper of the times and a careful selection of only that which is pure and inspiring should be patronized. To sift the chaff and gather only the pure grain is no easy task. Many books have much to recommend them, and yet somewhere within their pages one finds a "blot," a "moral leprosy," which mars what might otherwise be beautiful. We must simply learn to discriminate and teach our children to draw a sharp distinction between the idealistic and the material, between culture and refinement and that which appeals to the grosser sensibilities. We ought indeed to be thankful for the gifts of genius, especially in literature, and for the exalting, purifying influences of the songs of our poets. Indeed the field of literature at the present day is so wide, so full and so free that none need starve intellectually.

There is nothing of a temporal nature that so largely contributes to our enjoyment as the ability to call up passages from gifted writers, gems of thought which carry with them sweet shafts of purest pleasure. Then, often will some passage from a favorite author suddenly burst upon our mental vision, revealing a new beauty, which, as we, perceive, makes our eyes sparkle and our hearts throb with inexpressible emotion. Sometimes the association connected with the passage adds greatly to its interest for us. Some song that we learned in childhood, some stanzas that we conned, and on declamation day presented with fluttering voice in the presence of teacher and schoolmates; these seem especially dear to us in after years.

Mothers too often undervalue their part in making good citizens. It is the early teaching that forms the man's mind. The environments which surround the child, either intentionally or by accident, are those which shape his future. And here lies the mother's part. The child is hers to teach, to shape almost as she will. There is nothing more plastic than its unformed, questioning mind and the mother may shape it almost as she will. That mothers do not make the most of the great opportunities open to them is explained by their incomprehension of the value and weight of trifles. When we deal with a child, there is no trifle. The child who is instructed that his flag must never be lowered or trailed in the dust, and who is told of the men who have fought to keep it from falling to the ground, of those who fell one after another, holding the flag high above their heads, will never forget what this means. The lesson of patriotism is taught whenever and wherever the flag is treated with reverence. Never was the country more in need of her sons' and daughters' devotion than today, and it is a mother's part to feel and to teach the true values on which the stability of the republic must rest. The country has been likened to a chain, and it is true that the country, as the chain, is only as strong as the weakest part, and all will fall when that breaks. It is necessary, therefore, to strengthen that weakest spot. In a republic one does this by making every man of such a character that he is a factor for the moral strength of the nation. There is a story of an old nation weak in fortifications in the day when all towns were walled, that a visitor said to its ruler, "You have no defences." He replied: "Every man in the nation is a brick, and they all form a wall over which no foreign power can enter." This is what every man must be today in this dear land of ours. It rests with the mothers to bring home to the hearts of their children the truth that each is one of the bricks on which the structure of liberty must rest in the coming years. No child is too young to feel this, and no adult too old to bear it in his heart. What is needed today is the realization of the fact that dishonesty is a crime against the country. It is this because it makes one man weak who ought to be strong. It is a civic as well as a personal sin. In a country where all men are rulers, it is well that each should appreciate the dignity that attaches to his manhood. In ancient Rome there was nothing regarded so highly as the right of the free man to vote. In modern America it is well for the men of the country to have some of this pride in the power that the weakest among them wields. And he should be taught to value his voice in the councils of the people above most other blessings. There he speaks not only for himself, but by his words and by his ballot he makes or unmakes the welfare of others. That a man should sell his vote should be impossible in a republic, and it will be when all women do their duty to their country by doing their duty to their children. The woman who does not instruct her sons in the greatness of their right of suffrage has defrauded the man of a sense of right and honor which he should have. It is each man's duty to serve his country with love and loyalty and to give them gladly.

What is it that we hear in the distance? It is the children coming from the North, South, East and West to take possession of this great country of ours. Soon all its positions from the highest to the lowest will be in their hands; and it rests largely with us, as mothers, to decide the character of their dominion, for "the hand that rocks the cradle rules the world." The home life is the cradle of our national life. Let us, as true mothers, strive that our boys be men of business, men of character, men of patriotism, men of God, and our daughters, who are to be the mothers and teachers of the coming generation shall be on an equal footing with them in dignity, education, power and wisdom. However many accomplishments we may give our daughters, we believe they should concentrate on one thing by which a livelihood may be gained, if necessary. The essence of motherhood is self-sacrifice; it is the first act, the initial. We see it in almost all forms of life; the leaf dies for the new, the flower for the seed. As life sweeps on there comes a time, strange as it may seem, when the mother ought to find a higher self-sacrifice in practicing less self-sacrifice. It may be hard for her to forego the luxury of being trodden on, but it becomes her duty. It always has been, and still is, the mother's joy to give herself for her children, her family and the luxury of being trodden on, but it becomes her duty. It always has been, and still is, the mother's joy to give herself for her children, her family and even the stranger within her gates. It has always been their joy to accept all her service, her thinking, her sacrificing, her devising and working and abandonment of self to them, and of course there is but one outcome to it all. In order that she may be unselfish, everyone else in the home is, to a great extent, made an egotist. It becomes the mother to leave off forgetting herself to make the other members of the family remember her and her rights and their duties, to make sure of her share of pleasures and to do it all with conscience and determination and almost as a religious rite.

It is too frequently the habit of the young to regard the mother, no matter how much they love her, "as a back number," as something, if not to be laid on the shelf, yet existing solely to hold the home together. The young people would feel lost if she were not there on their return from work or pleasure. To some she is a part of the house, to others a necessary shadow, an indispensable feature. If there is a disagreeable task to be done it usually falls to her lot. If a journey or a pleasure trip has been made possible she declares herself without interest and remains at home. Some of the other members of the family go in her stead. They let mother do everything for them; what do they do for her? By and by the mother wakes to find her own self-forgetfulness has made those she loves masters of selfishness. If mother is really the angel of the house, she must spread her wings over it to guard against this danger as much as any other, for it is one of the easiest sins into which the household can slip. That house where all work and enjoy and rest together, and where, remembering the mother's long term of sacrifice, each one is more eager than the other to afford her rest and pleasure, is a true home. Where time does not count, trouble is overcome, each individual wears a small halo of sacrifice, and the atmosphere is the perfect one of love and joy and duty. There are sins on every side, and in thousands of forms, that threaten defilement. But the experience of the world unhesitatingly points out one curse as especially demoralizing; it is, and has been, the curse of all ages, "Intemperance." It is a foe to the home, the state and to the nation. It spreads its branches over this fair land of ours, breeding crime and anarchy, robbing the people of thousands of dollars every year, ruining its manhood, corrupting its legislatures, thwarting the will of the people and undermining the foundation of the government itself. We read in that blessed book, "Woe unto him that giveth his neighbor drink, that putteth the cup to his lips," yet what do we see in this christian land of ours? People who sing "Rescue the Perishing" and pray "Thy Kingdom Come," by voice, pen and vote sanctioning a system that gives license to this nefarious traffic. We also read, "Woe unto him that buildeth a town with blood and establisheth a city by iniquity," and yet we find our government accepting blood money in the shape of license from this iniquitous business, thus legalizing it and becoming a partner in crime in order to build up our towns and establish our cities. Oh, what devastation, crime and misery follow in the wake of such sin! What innocence is made to suffer; what tears are made to flow from mothers' and dear ones' eyes; what loss is caused to the church, home and state.

Mothers, let us not only preach, but practice temperance in our lives, in our homes, and pray that the day may not be far distant when the curse of intemperance may be swept not only from our country, but from every land and nation on the globe, and

"Since right is right and God is God,
Right the day must win.
To doubt would be disloyalty,
To falter would be sin."

I saw a little cloud arising in the western horizon; in a few moments it spread over the expanse of heaven and watered the earth with a genial shower. I saw a little rivulet start from the mountain, winding its way through the valley and the meadow, receiving each tributary rill which it met in its course, until it became a mighty stream, bearing on its bosom the merchandise of many nations and the various productions of the adjacent country. I saw a little seed dropped into the earth; the dews descended and the sun rose upon it; it started into life. In a little time it spread its branches and became a shelter from the heat and the fowls of heaven lodged in its branches. We see a little, smiling boy standing by the side of his mother and hear him repeat from his lips some of the sweet songs of Zion. We see him kneel at her feet and ask God to bless his dear parents, the world of mankind and keep him from temptation. In a little time we see him with the books of the classics under his arm, walking along buried in deep thought. We go into the school and hear him saying to a little group, "Suffer little children to come unto me." In a few years we see him a man pure in heart, strong in intellect, unwavering in principle, equipped with all the elements that go to make up a perfect specimen of manhood, successfully filling his place in life. We look and see that same mother at whose feet he has knelt and from whose lips he has learned to lisp the name of Immanuel. Her hair is whitened with the frosts of winter, and on her cheek is many a furrow; but meekness sits on her brow and heaven beams in her dim eye, glistening with a tear. And we see in that tear the moving of a mother's heart, while she reverts to days gone by when this soul was first dawning into light, listening to the voice of instruction and inquiring, in childlike simplicity, the way to be good; and we say this is the rich harvest of a mother's toil. These are the goodly sheaves of that precious seed which probably were sown in weeping. And your gray hairs shall not be brought down in sorrow to the grave, but in that bower of rest you shall look down on him "Who will arise and call you blessed." Would that every mother might catch the spirit of the real artist or sculptor as he strives with the intensity of his soul to bring out the vision of truth and beauty from the block of marble or from the canvas as it lies before him. Mothers, is there a higher calling than ours? God has breathed into our marble the breath of life, he has placed upon our canvas a living soul and given us for our coloring the elements that will not fade with time, but will glow with surpassing loveliness through eternity.

"HOW TO GROW ONE HUNDRED BUSHELS OF CORN PER ACRE—BY ONE WHO DID IT."

BY WM. H. EVANS.

[Paper read before the Independent Farmers' Institute held at Rushmore, Putnam County, February 15, 1908.]

On a field of 11 1-4 to 11 1-3 acres, having one acre (as near as I could calculate by counting the hills) in potatoes, sweet corn, cabbage, beets and tomatoes, leaving 10 1-4 to 10 1-3 acres, I raised 1,035 bushels, measured by wagon-loads of 40 bushels per load; those loads always shell from 40 to 43 bushels per load when sold at the elevators. In the first place, this field was fairly well underdrained, having tile ditches every six rods, which I consider sufficient in black swale ground in a favorable season; it is not enough in a wet season. In the second place, it was in clean clover pasture the previous season, and I did not have enough stock upon it to pasture it down closely, so that when I plowed it the clover lay in a thick mat over the ground so that it choked under the plow beam quite frequently. I plowed it in the fall and winter, so that in the spring it was as fine and mellow as an ash heap. In preparing this field for planting, I harrowed it both ways with a spike tooth harrow, just enough to level it nicely, and to uproot any weeds that may have started; this put my field in an onion-bed condition.

Let me say right here, do not get in too great a hurry to plant, because you see someone else planting, but wait until the ground gets warm, and be sure to get your ground in good condition—that onion-bed condition, if possible—as ground properly conditioned before planting is half cultivated.

A few words only on the selection of seed corn. Someone has truly said, "To be well bred is to be well born." This, no doubt, was said of human beings, but is just as true of animals and also true of vegetable life. There is no doubt but that careful, as well as indifferent, breeding has its effect upon the offspring. No one can raise a fine, prize winning horse from a scrubby bred colt. No one can raise a champion cow or steer from a calf with no good breeding blood back of it. Just so with any other kind of stock. It is likewise true of vegetable life. Who can grow an extra good crop of wheat, oats or corn, or any other kind of a crop without previously having carefully selected the seed, seeing that it is of good quality, the more pure the better, of uniform kind, free from mixture, etc. Plant "any old kind" of corn in "any old kind of a field," plowed "any old way," cultivated "any old way" and you will get "any old kind" of a crop. For it is a law of nature that like begets like, and this law has not as yet been repealed by the legislature at Columbus, Ohio. So that the selection of seed corn is certainly an important matter; but I cannot dwell at any length upon this, but will boil it down and sum it up in a very few sentences. Select a kind of corn suitable to your fields or fields that you expect to plant, not too large to mature in good time and not too small to produce a good, large crop. This selecting should be done in the fall, either before the corn is cut or at husking time, and hung up or racked up to dry before severe cold weather in an airy place, where it will not get wet and where rats and mice will not bother it. Select model ears or ears that are a good type of the kind of corn, with a sound, clean cob, long wedge shaped grains of uniform size in straight rows upon the cob; this being important, as grains grown in straight rows are most uniform in size and uniformity in size is very necessary to uniform planting. No planter will plant grains of different sizes uniformly. Of course, you should select ears well filled at both ends, grains closely packed to make them sound or solid upon the cob, etc. But I must leave this matter.

PLANTING THE CORN.

I planted my field with a two-horse check-row planter. Now be very careful as to the kind of work your planter is doing. You should try it upon the barnyard or road before going into the field. See to it that your planter drops accurately. Select plates for your planter that will drop three grains of the corn you are planting in each hill, as I believe that is the best number of grains to the hill. Be careful not to plant your corn too deep, 1 1-2 to 2 1-2 inches I consider best. There is more danger of getting it too deep than too shallow in mellow ground. Upon this work of planting depends your stand of corn, and without an even, uniform stand you can never raise a bumper crop. The stand I had in the field to which I refer was the best I ever noticed. I do not think that there were 50 hills missing in the whole field and nearly every hill had three stalks in it; no more and no less.

CULTIVATING.

As soon as the corn is up nicely, commence cultivating it—the sooner the better. I take a two-horse cultivator with the smallest or narrowest shovels upon it, work as closely as possible to the little corn, very carefully, too, slowly and steadily, just rubbing the corn on both sides with the little shovels. I follow the cultivator with a hoe, not to hoe much, but to straighten up and uncover any of the corn that may be partly or completely covered with earth; as everyone of these little stalks you fix nicely this way is apt to bring a nice, large ear, which is very necessary to produce that bumper crop.

Cultivate it crosswise as soon as finished first time or as soon thereafter as possible, which will break all ridges between the hills, and if you do good work with the cultivator these first two times you have the backbone of the weeds broken. Keep the cultivator going continually; of course, we expect you have more than one field to work. I am not one of those who believe you can work the corn too often. Keep the ground mellow on top by working it so that this mellow surface will act as a mulch to keep the ground from cracking in case of a drouth. I like to take a hoe after the cultivator the third time, to cut away any weeds that the cultivator may have missed. But if your field was clean, clover pasture the previous season, plowed in the fall or early winter, well frozen through the winter, put into onion-bed condition before planting and cultivated thoroughly from start to finish and last, but not least by any means, *a favorable season*, you will not be troubled much with weeds. How often to work or cultivate your corn "depends." But try and lay it by in good condition, with a mellow surface. If it should rain hard after laying your corn by, I believe it would pay well to go through it with a one-horse cultivator. (One of those that has levers to widen or to make narrower.) Set it wide enough to nearly fill the row. By this means you break nearly all the crust that has formed upon the ground on account of the heavy rain, and leave the ground mellow on top, to act as a mulch again, in case it should turn dry, which it often does in the fall or late summer, after heavy rains.

One more important thing. After you have grown this bumper crop of 100 bushels per acre or more, be sure, if at all possible, to gather it into your cribs before Thanksgiving. Then go to church upon that day to thank the good Lord for what he did toward that bumper crop, which you certainly ought to acknowledge was much more than you did.

"THE AMERICAN FARMER. WHY HE IS NOT THE PROTOTYPE OF 'THE MAN WITH THE HOE.'"

BY MRS. ROBT. LUCAS.

[Read at the Farmers' Institute held at Rainsboro, January 2, 1908.]

There are distinctions between the American farmer and the man Mr. Markham had in mind when he wrote his poem on "The Man With the Hoe." Mr. Markham took as his basis the old-world toiler in the soil. But his verses were not intended to apply to the farmer conclusively, but to all who are forced to excessive physical labor, that quenches the fire in the mind and freezes the sentiment in the heart. There are many thousands of such workers in this country. They may be found in the workshops, factories, offices and on the farms. A rich man whom the world calls successful may be "a man with the hoe." He may have been since the beginning of his career so wrapped up and engrossed in money-getting that he has never looked beyond his own narrow horizon into the wide world of thought and sympathy with his fellow beings. This is a world of much more sunshine than the little and selfish one in which such a man has been dwelling, but after awhile he loses the power to enter it.

The peasant abroad has ever been forced to a strenuous physical struggle for bread, devoid of intellectual activity, except of the low kind that pertains to mere physical life and superstition. It is a struggle that long ago drew the type of man portrayed in Mr. Markham's picture and poem down to earth, and almost out of the realm of the imagination and mind, where is to be found the only true life for human beings. It is not life to struggle desperately and incessantly for merely the means wherewith to keep up the struggle. It is no wonder that generations of such a process prove deadening to the spirit and that a man becomes at last

> "A thing that grieves not and that never hopes,
> Stolid and stunned; a brother to the ox."

Farm life, in some ways, is a hard life; but the training is invaluable. The boy on the farm cannot help absorbing some of the qualities of surrounding nature. He unconsciously draws into his being some of the wide expansiveness of the fields, some of the calm and quiet dignity of the woods, some of the lofty ruggedness of the hills. The boy from the city should envy him who has spent his days amid these nourishing and strengthening influences. But after the farmer boy has reached his maturity and after his individuality has shaped itself and he has all the country can give him in the way of mental and physical strength, if he greatly desires to take his chances in the city, it may be wise for him to do so. The opportunities are greater and more numerous than on the farm, but the chances of failure are also greater.

The American farmer has every reason to be thankful that his lines are cast in a land where the tiller owns the soil, where agriculture is, in fact as well as theory, the noblest occupation, and where, by the sweat of his brow, he not only earns a competence, but enjoys every advantage, social and intellectual, that is granted to any class in our common country. He is no human machine, bound by custom to the methods of his ancestors, but a keen, careful and intelligent student, versed in nature's secrets and prepared so to modify his opportunities as to secure the best possible results from the conditions which surround him. American agricultural success has been attributed to the use of improved implements and labor-saving machinery, but the great underlying reason is the fertilization of agriculture with American brains.

For some time our farmers have been very prosperous. It has been no little single year affair, but a great tidal wave that has been sweeping onward since 1897. That the nation is indebted to the farmers and their industry must be admitted by all. When it is realized how dependent upon this industry are all other industries, it is impossible to estimate how great this debt really is. The railroads have recognized it. A prosperous year in farming brings the keenest joy to the railroad magnate. The banks have recognized it by the increase of their deposits. Congress has recognized it by forming an agricultural department. Our states, by establishing experiment stations, and our colleges, by offering our farmer boys the advantage of a regular course of study in their chosen science. In 1896 the depths of American agricultural depression were reached, and it is by comparison of the present situation with that existing in that year that the true measure of the farmer's thankfulness can be appreciated. A hard winter and a cold, late spring made things look blue for the farmer at the beginning of the crop season this year, and at the end the big black clouds of a money panic rolled up out of Wall Street, but a favorable change in weather conditions at the right time happily averted crop failures, and the efforts of monopoly magnates to bring about an industrial and commercial crash have fortunately been unavailing. The skies have cleared and business will be sounder and better than ever.

In 1896 the cotton crop was valued at $325,000,000 against $675,000,000 this year. Wheat then brought the farmer $310,000,000, this year $500,000,000. Corn, the king of crops, $491,000,000, this year it reaches the stupendous sum of $1,493,000,000. Poultry and egg products have more than doubled in value. Mr. Wilson tells us the total value of farm productions this year exceeds all previous years, being $7,412,000,000, an amount ten per cent. greater than 1906. seventeen per cent. greater than 1905, twenty per cent. above 1904, twenty-five per cent. above 1903 and fifty-seven per cent. greater than the total value for 1899.

Year after year the farmer's position has grown better from every point of view; his capital has been growing; his land has become more valuable, his scale of living has advanced, and his intellectual and social advantages have kept pace with his improving financial position. He is no longer an isolated individual, cut off by location from contact with his fellow beings. Our country is covered with a network of wires that represent rural telephones; and rural free mail delivery furnishes the daily papers almost as early as in the city.

The farmer generally is a hard working man, but there is no occupation or business one can enter and make a success of without applying himself energetically and diligently.

"No man is born into the world whose work is not born with him. There is always work and tools to work withal, for those who will; and blessed are the horny hands of toil."

"THE EDUCATION OF THE FARMER."

BY CLYDE DE MAR.

[Read at the Farmers' Institute held at Newtown, December 6, 1907.]

Of all the various topics that have arisen for discussion before the Farmers' Institutes, it seems to me that the most important is "The Education of the Farmer."

Since the early days of our national history, yea, since the earliest Colonial times, the importance of education has been recognized. But there was a time when it was thought that a person who did not know enough to do anything else might farm, and the most convenient occupation for the person who was unable to do the hard work on the farm was teaching school. But times are somewhat changed. At the present time it is generally understood that education is as essential to the success of the farmer as health is to the success of the teacher. The farmer of today has enemies to contend with and friends to compete with; he must meet conditions which were almost unknown in the good old days. In days gone by he planted his crops and the virgin soil yielded bountiful returns, and what need he care? The man on the farm today is confronted with problems that were unheard of in the days of the pioneer. I would not have you underestimate those hardy pioneers. They were your ancestors and mine, and they it was who laid the foundation of our great commonwealth. It is for us to maintain the same high standard of integrity and sturdy manhood which they set up before us.

It is quite natural for the farmer to seek information concerning the best methods of farming. He wants to know how he can produce the largest crops per acre and at the same time improve his soil. He wants to know how and when to spray his fruit trees. He wants to know how to raise better corn than his neighbor—a bit of generous rivalry along this line is all right, provided that when he prays for rain, he does not forget his neighbor's cornfield. He wants to know how he can produce the best hogs. I have read of a rivalry among the farmers of Kansas in the production of hogs. One farmer posted this sign: "Anyone wishing to see the biggest hog in Kansas, call at my farm and inquire for me." It is necessary that the farmer should know the most profitable methods of feeding his stock. He needs a thorough knowledge of the different kinds of soil and the composition of fertilizers.

Now these are a few of the things that are generally considered as being of some practical value to the farmer. These things affect his bank account; they are of the utmost importance. They affect the well-being of his family. They help him to educate his children. A knowledge of all these things is an important factor in the education of the farmer. I believe this is the prime reason that Farmers' Institutes have been organized. Isn't there a tendency among farmers sometimes to think that we have learned about all there is to know about methods of farming? Let me say that when a man has learned all there is to know about farming, he has fulfilled his mission as a farmer and it is time for him to retire. Let me say further that the man who stays away from Farmers' Institutes because he thinks the state speakers do not practice what they preach or do not give us things that are practical, that man ought by all means to attend these meetings and share his knowledge of practical things with us.

It is my belief that Farmers' Institutes ought to be perpetuated and that the interest ought to grow as the years go by. This must be true if we attend them in the right spirit. The object is not to give one person a chance to display how much more he knows than someone else, but rather a friendly interchange of ideas, and above all things, a good social time.

It thus appears that this is an educational institution for the benefit of the farmer. But let us not take a narrow view of education. It involves something more than learning the latest and best methods of farming. It is a process which begins at birth and continues until death. The education of the children is the chief concern of the farmer. His corn crop may fail this year and be forgotten next, but if his children are not educated, all posterity is affected. If our nation is to endure we must educate our boys and girls.

It must be remembered that education is not a one-sided affair; there must be three sides to it. You may have a physical giant, an intellectual pygmy and a person who is totally depraved all in the same man. You may develop the intellect, but if you neglect the moral training you may still have one of the biggest rascals that ever lived. And of what use, pray, is moral training without the intellect and physique to do the things which we learn ought to be done?

It is a question with me as to whether education is to be considered a means or an end. Does the farmer need to be educated in order that he may farm successfully or does he farm in order that he may become educated? I am inclined to take the latter view. Education is not merely preparation for life —education is life. We live to learn; when we cease to learn we cease to live, and I would say to the farmer who has learned all that there is to know about farming that he ought to quit farming and try some other occupation.

I believe that life on the farm is calculated to develop the best that is in man. I believe that the farm is the best place in the world to raise boys and girls! I wish to point out some of the phases of farm life that are helpful to them: First, that it is a life full of industry; there is no place for lazybones on the farm. At an early age the boy as well as the girl has an opportunity to learn habits of industry. This is of the utmost importance, as it is laying the foundation for a life of usefulness. Each boy and each girl should have his portion of the work to do. If they are not required to do some work, they are deprived of that which goes to make up an important part of their education.

It is possible to teach a child to like or dislike manual labor. I hope you will not say that it is impossible for a child to like to work, for I know the opposite to be true. I know that it is human nature to want to be active. You cannot keep a child quiet if you try. He must be active. It is for you as parents to direct this activity into the right channels, and if you do not make the boy despise work, he will like it. He wants to help you; let him help. I do not say that he will be full of enthusiasm over every kind of task that may be found on the farm. Some work must be drudgery. It is thus in every occupation; and it is an important part of the education of every person to learn to be willing to do a certain amount of drugdery.

I would not have the entire time of the boy taken up with work. A reasonable time should be given for recreation. The recreation of the boy on the farm is free from the evil influences found in the cities. He can roam at will through the meadows and woods. He breathes the pure air that God intended for him. He is in constant contact with nature and he studies nature and learns about her wondrous works. He learns it at first hand. I do not wish to undervalue books on nature, but I do believe that what a boy learns for himself by observation is of more value to him than anything he can learn from books on the subject.

"Knowledge never learned of schools,
Of the wild bees' morning chase,
Of the wild flowers' time and place,
Flight of fowl and habitude
Of the tenants of the wood.

"For eschewing books and tasks,
Nature answers all he asks.
Hand in hand with her he walks,
Face to face with her he talks;
Part and parcel of her joy—
Blessings on the barefoot boy."

The farm offers the best opportunities for the physical development of the boy or girl. A gymnasium is a good place to develop the body; physical culture is excellent, but the boy or girl on the farm, while performing the daily tasks or running wild in the fields and woods, has a better chance for physical development than any course in gymnastics can give. And, best of all, this development goes on without his giving attention to the fact that he is developing muscle; whereas, in taking a course in gymnastics, the work is likely to grow monotonous, as it is done merely for the exercise.

Concerning manual training a word should be said, as it is being introduced into our schools. To the farmer boy it matters not whether it is pursued in the schools or not; he gets it at home. If you do not want him to exercise his propensities for constructive work, you must keep your tools securely locked up. As for the girls, they have a chance to learn as much about domestic economy as in the best equipped schools. Not every home offers this opportunity, but every home should, if possible, for the sake of the girl, for the sake of the home and for the sake of the future home.

Whether mother needs the help of her girls or not, she ought to let them help. She ought to require them to help and show them how. Give the girls a chance to bake bread. They may not make it as good as you can the first time, but let them try again and keep trying. They can not learn it by watching someone else. They learn to do by doing.

Fortunately for the boy, the farmer needs his help. Let him plow corn. Yes, let him learn as much as possible about how a farm should be conducted. It matters not what occupation he may wish to follow when he grows to manhood; if he is going to be a preacher, it will make a better preacher of him. Abraham Lincoln was a better president than he could have been otherwise for having learned to work on the farm.

If the boy intends to farm he should learn how to manage the work as he grows up. Let him have as much of the responsibility as possible. The young man who has always depended upon "Dad" to do all the managing is likely to find himself in sorry straits when he undertakes to conduct a farm for himself. He is not fitted for it. He knows how to work if someone tells him what to do. He knows how to work for someone else, but not for himself.

In conclusion, let me say that the work of the farmer requires as extensive an education as that of any other calling. He should have a college education, if possible. He should learn to appreciate the best in literature and art. He should be trained for citizenship. He must feel that he is a part, and an important part, of the state, and must keep himself informed concerning the affairs of state, in order that he may intelligently exercise the right of citizenship. Last of all, the farmer should learn to feel the dignity of his work. There is no calling that is more noble than tilling the soil.

Can the farmer succeed without education? I answer, that success is not measured by the number of bushels of potatoes he raises, nor the number of acres he leaves to his children. He alone succeeds who builds up a noble character, and character building is the end and aim of all education.

"RAISING SHEEP ON A SMALL FARM FOR PROFIT."

BY M. M. CAMERON.

[Read at the Farmers' Institute held at Richwood, January 1 and 2, 1908.]

Mr. President, Ladies and Gentlemen:—My subject for your consideration is raising sheep on a small farm for profit. I want to say right here that I do not run an experiment station, neither do I expect to talk about balanced rations, but my talk will be along the line of what I have experienced in the care and handling of sheep. Nevertheless, I do appreciate what our experiment stations and our colleges are doing for the betterment of mankind in the way of preparing our young men and women for the duties of farm life.

When called upon to prepare a paper on the above subject, I hesitated, for different reasons. First, on account of inability or lack of education; second, because we are living in an age when men differ, and I might say women, too, and I was in doubt whether it would be worth while for me to express myself in regard to the raising of sheep. Men have their ideas and I have mine. I am glad that we have this privilege. You will agree with me that it is one thing to raise sheep and another to raise them for profit. If you will go with me back to my boyhood days, to the days of our fathers and grandfathers, you will notice that they cared for their sheep in a different way from the up-to-date farmer of today. It was back there that we got the idea that sheep would thrive where other stock would starve. It was back there that we got the idea that all that was necessary were snow banks and hillsides for windbreaks, straw stacks and straw sheds for shelter. I am sorry to say, that we have men today who still cling to that idea. If you remember, it was a very common thing to see the pelt man with his mule team and wagon, going by loaded with pelts, and a large per cent. of dead lambs lying in the pasture field and in the back lots, all on account of exposure and neglect. I remember one time seeing a certain party bring a young lamb into the house to warm it up, and of course the nursing bottle was ordered, containing one part milk and three parts water. I don't want to condemn this party nor the nursing bottle, but I do want to condemn the contents. The idea of trying to raise a young lamb on water. I presume that with the high price of wool and the abundance of cheap pasture which prevailed at that time, they did realize a profit from their flock of sheep.

Now in regard to raising sheep for profit. If it is necessary for the farmer to keep good horses, good cattle and good hogs in order to realize a profit, it is just as necessary for them to keep good sheep.

In selecting breeding ewes, I would denounce the long legged, open wool sheep that only shears from two to four pounds of wool, and the little, measly, fine-wool sheep; they are not the sheep for the farmer to keep. I would select large, medium or open wool breeds; the larger the better. They should be well wooled ewes, ewes that will shear from eight to twelve pounds of nice, clean, medium wool. They should be strong, healthy and of the low-down type. They should combine the qualities of both wool and mutton. It is my honest opinion that the day is past for the ordinary farmer to devote his time to the raising of fine wool alone. They should be prolific ewes, ewes that will raise a large number of lambs; the more the better, for it is from this source that we get our profit.

I believe the Downs breeds or the Cotswolds are the best for the ordinary farmer, as they are noted for raising large numbers of lambs, often two and sometimes three each. The large Merino or fine wool sheep, crossed on the Oxford, Shrop or Cotswold ram, makes a very good cross. The lambs are good size and bring the top price, generally. It might be well for me to call your attention to the fact that two of my neighbor boys, a few years ago, bought eleven medium fine wool ewes. They have been selling their lambs at weaning time to the shippers. In 1906, they got six and one-half cents a pound for their lambs and 80 cents a pound for their wool, which amounted to about nine dollars per ewe.

In the year 1907, these ewes raised 15 lambs, which were sold to the shippers at five cents per pound. They weighed 102 pounds per head, and brought $76.50. The wool from these eleven ewes brought $23.10 or a total of $99.60 for both lambs and wool, a fraction over $9 a head. These ewes only cost the boys $2.25 per head, so you can easily see that they are paying a good profit on the investment.

If you will go with me back to 1893, I will give you my experience in raising sheep. It was then I started to do for myself, and of course I could not start without sheep, so I bought 19 head of good breeding ewes. They were very large and of the medium wool kind. If you remember, about that time it was not very encouraging for the flock master; nevertheless, I was determined to try sheep. I paid $3.05 per head for those ewes, or $57.95 for the bunch. That fall, on account of working out by the year, I let these ewes out on the shares, getting half the wool and half of the lambs. That year they raised 32 living lambs, which were sold in the fall at three cents per pound. They averaged 70 pounds per head and brought $67.20. The same year these ewes clipped a fraction over seven pounds of washed wool per head, which was sold at 19 cents per pound. The wool and lambs brought $93.80, so you see they paid me $46.90 on my investment, and I still had the ewes, which were as good as ever. If I should have had charge of the flock myself, they would have paid for themselves the first year and left a balance of $35.85 in my favor for care and keeping.

In the fall of '94 I took charge of the flock myself. They proved to be very profitable all through the panic, paying me from $90 to $110 every year. In the fall of 1898 I sold the ewes at $4 per head, only to start again in 1899. This time I bought large medium, fine-wooled ewes and later on a few full-blood Oxford ewes. Today I have a very nice bunch of high-grade Oxford-Downs. I presume they will weigh from 140 to 200 pounds each. They clip every year between eight and nine pounds each; one year they averaged a fraction over nine pounds. I want to call your attention to the fact that the man who has been keeping ewes since 1898 and has not been realizing from $7 to $12 per head from them, there is either something wrong with the ewes or there is something wrong with the man.

I believe I will be safe in saying that I can keep a ewe one year in good shape and her lamb or lambs until weaning time for $3.50. Well, if her wool will bring $2.25 and her lamb $5, is not there a small balance of $2.75 for my time and trouble. Since the fall of 1889 until the fall of 1896 I kept about 50 ewes on the farm. From these 50 ewes I always figured on getting from 65 to 75 living lambs and that meant at selling time, of both wool and lambs, over $8 per head. Figuring the lambs at five cents per pound and the wool at 25 cents per pound (this is figuring it very low, taking the prices that I have been getting for my lambs and wool the past few years), I always aim to get from one-third to one-half more lambs than I have ewes. I hope to give you a more correct report of the weight of my lambs before I close.

Just a few words in regard to the ram. Since I started to do for myself, I have always used an Oxford or Shrop ram. I think they are the best we can get. In selecting a ram, I want a low, heavy body, straight on the back, broad and level over the shoulders, with thick neck, and with good, heavy bone. He should shear not less than ten pounds of wool. I want the wool of medium length, smooth on the surface, the thicker the better. He should weigh 200 pounds or over. The man who uses an inferior ram is simply taking a back track, for in the ram lies part of the secret of success.

This last year I only had 19 ewes and they raised 22 lambs. I sold 20 fleeces of wool and 13 of these lambs for a little over $168, and I have nine ewe lambs left. I weighed one of them a few days ago and it weighed 119 pounds, so you see it is all in keeping good sheep and then caring for them. I was offered $75 for these lambs a few days ago, which would make a total of $243, or an average of about $12 per head.

CARE OF SHEEP.

You will agree with me that if there is anything in education, there is surely something in advancement. Then let us get away from the ideas and theories that were advanced nineteen hundred years ago. Log cabins and mud roads were all right in those days, but they are now almost a thing of the past. Straw stacks, straw sheds, snow banks and hillsides should be, when it comes to using them for sheltering sheep. Sheep need care. They need a dry, well ventilated shed in the winter; they need clean, wholesome food, clover hay, good, dry, bright fodder and clean oats or wheat straw. Never feed the straw in racks. Sprinkle it with weak brine and scatter it over the frozen ground. They need a nice, clean, dry lot or pasture field to run in on bright days. I don't feed very much grain. By giving them plenty of pasture through the summer months, if healthy, they will come into the winter in good condition.

In case they are a little thin in the fall, I commence feeding a little grain in October and November, in order to get them in good condition before cold weather sets in. Sheep often suffer for water. They should have free access to pure, fresh water at all times. In order to keep them healthy through the summer, I give them plenty of salt with turpentine in small quantities. I also give about a tablespoonful of copperas to every ten sheep about once or twice a week. I feed a small amount of sulphur. Pine tar used on their noses through July, August and September is very good for them. I believe it has a tendency to drive away the grub fly. I have been with sheep all my life. I have had experience with foot rot and the scab, but do not recollect ever having any experience with grub in the head. It is my opinion that there are more sheep dying today without grub, or in other words, without feed, than there are dying with grub in the head. Exposure and filthy sheds mean catarrh and head trouble and that means grub in the head. Keep your sheep healthy and you will not be bothered with this trouble. The shepherd has another thing to contend with, and that is the good for nothing, worthless cures. They are a nuisance and a detriment to the flockmasters of our country, and if I had my way, they would have to seek shelter outside the boundaries of Ohio.

TIME FOR LAMBS TO APPEAR.

I aim to have my lambs make their appearance any time after the 25th of April and on through May. By this time the weather is beginning to get nice and warm. I take great pains with my ewes at this time. Let the weather be what it may, the ewes and lambs are all driven to the sheep house every night. I aim to keep the ewes that have little lambs by themselves; that is, I have a different pasture lot to let them run in for a few days or until they are old enough to care for themselves, when they are ready to be turned with the rest of the flock. In my sheep house I have partition gates to keep the ewes that have lambs separate while in the shed. These gates are so arranged that in case a ewe fails to own her lamb she can be placed in a small pen and kept there until she owns it. In case I fail, which I sometimes do, I then resort to the nursing bottle. With a good, fresh cow, which every farmer ought to have at this time, I generally save the lamb, not by diluting the milk, but by giving it fresh from the cow. I feed the lambs often and very little at a time. After the lambs are eight or ten days old, I feed all they want about four times a day. I do not have much trouble with ewes disowning their lambs if I have them come after the above date. I always clip my ewes about one week before the lambs begin to make their appearance. I do this in order to get rid of the ticks, if there are any, and to get the wool off so it will not interfere with the lamb's nursing.

At this season of the year I am with my sheep quite a good deal. I aim to see them often through the day and the last thing I do before retiring I make a trip to the sheep barn to see if everything is all right. By having my lambs come at this time of the year and by having the wool off, with plenty of pasture and good, healthy ewes, I very seldom lose a lamb, and that is what helps out when selling time comes. Another thing I want you to notice; my lambs always do well. There is nothing to hinder a rapid growth if the season is at all favorable, and at selling time in the fall, I always have a nice, even bunch of lambs, lambs that have in the past seven years averaged 84 to 120 pounds at from five to seven months old. I sold one lamb this fall, four months old, which weighed 100 pounds, so it is easy to be seen that it is not necessary to raise February, March or April lambs in order to have a good, heavy lamb in November.

I have had some experience in trying to raise February and March lambs. Some I raised and some I did not. In the fall I always had some that were inferior. It takes extra care, extra feed, and it is a great strain on the ewes to have the lambs in February and March. With all the good care and all the good feed that I could give the ewes, there were always some that would go on grass thin, only to stay in this condition until time to feed grain in the fall. So raising February and March lambs is a thing of the past with me. I urge you to have your lambs come at a time when you can save them and at a time when the ewes will own them, at a time when your ewes will have plenty of grass.

Before I close I want to call your attention to that word *Care* and what it will do. Care will save the lambs; care will make the carcass; care will ward off disease; care will make fat, and fat will make wool. This all means money. I want to emphasize that word care, it is a whole essay in itself. So I urge you to care for your sheep. Don't use an inferior ram. Have an object in view. When I say object it reminds me of a conversation I had with an old pioneer farmer who had spent almost a lifetime in the breeding of fine wool sheep. He said that he had an ideal in view, and that ideal was to raise a bunch of ewes that would shear 12 pounds of clean, white wool, all of one staple.

"Have staying qualities." This reminds me of still another conversation that I had with a prosperous farmer and an up-to-date sheep man. He said that he had seen the time when wool sold at $1 per pound, and from there down to 25 cents. When it got down to 25 cents he said he did not believe there was much in sheep, but was not desirous of selling his sheep, as a great many do. He turned his flock over to his son. The last conversation I had with him was in 1898, when he told me that of all the live stock that he handled, of all the business he transacted, the easiest money that he made came from his flock of sheep.

So I urge you to stay with your sheep. Stay with your sheep in adversity, and they will stay with you in prosperity. Thank you.

THE FARMER'S WIFE AND THE HOME.

BY MRS. FRANK BEAL, MENTOR, OHIO.

[Read at the Farmers' Institute held at Painesville, Ohio, December 17, 1907.]

The woman's part in the world today is greatly different from what it was in our grandmother's time. That women are filling almost every position in the educational world, as well as in business, proves the justice of the changed conditions. Every woman has the right to choose her life work, to think on all themes, to settle the question of marriage and to share in the management of church, society and state affairs.

As to the farmer's wife, we feel that much of the farmer's success depends upon her.

Probably in no other occupation is the man's and woman's work so woven together as on the farm. There the husband and wife have more opportunity for helping each other. The work of the farmer's wife is more varied than the work of many other women.

Woman's true sphere is the home. She has been qualified for domestic duties by nature. Every young girl ought to be taught the duties of housekeeping and practice doing the work herself, although she may never expect to keep house. It is the last thing about which a woman should be ignorant. The wife should be a good housekeeper, and to be a good one three things are essential. First, to have a place for everything. Order is heaven's first law and should be the first law in every home. Second, to keep everything in its place. Third, to have system about the work. Wash on Monday, if possible, and not wait until Saturday afternoon and then wash out a few pieces that you must have for Sunday. Iron on Tuesday and do some baking. After getting the rooms in order by the middle of the week you are ready for company. Of course, there are many other things to be done, such as churning, sweeping and dusting, mending and sewing. There is always plenty to be done, but by having system with our work and getting things done promptly, we have time for reading and other things we would like to do. System is the secret of saving labor. Housekeeping need not become drudgery. Some people call routine drudgery, but good routine is simply good living. We cannot do anything well without systematic habits. Take care of the minutes and the hours will take care of themselves. Poor housekeepers often take many unnecessary steps and wear themselves out before their task is accomplished.

We probably all know families whose work is never done. They don't seem to be idle, but instead of driving their work, their work is forever driving them. Then we can recall other households where there never seems to be any hurry and excitement, but everything is in its place, every room presents a neat and orderly appearance, the dishes are washed and put away, the silver is polished, sewing and mending is kept up and still there is leisure time, and this too where no help is employed in the house. The secret of it all is good management or system. President Roosevelt in addressing a mothers' congress said: "The most honorable and desirable task which any woman can set before herself is to be a good housekeeper. The welfare of the state depends upon the proper discharge of the obligations and responsibilities of woman." Housekeeping, like every other occupation, needs study and cultivation. We should have pride and a love for our work in order to make a success. To be a housekeeper is a noble calling.

Do not be ashamed if you are a farmer's wife and because your work lies in a country kitchen. The first essential of usefulness as a homemaker is to be a good cook. The meals ought to be more than something to eat. Each meal ought to contain the proper proportion of heat, energy and flesh producing qualities. The ideal farmer's wife will care more for well prepared and healthful cookery than ornamental display about the house. The model wife plans every meal on time, sees that the table is well spread with plenty of good, wholesome food and serves it in an inviting and appetizing way.

"He may live without books;
What is knowledge but grieving?
He may live without hope;
What is hope but deceiving?
He may live without love;
What is passion but pining?
But where is the man who can live without dining?"

And what is true of the man is undoubtedly true of all the family.

The true aim of housekeeping is not the mere jingling and rattling of a few pans, dishes and kettles at stated periods. It is not the sweeping and dusting of everything in sight, it is not in telling of the great amount of labor that is accomplished in a given time, but it is rendering the home more attractive and comfortable. It is the labor of love for the dear ones who share the home with us. To minister to those we love is pleasant and requires skill and labor to do it satisfactorily. Mrs. Henry Ward Beecher once said: "No path ever led to that which was worth honest labor without some thorns. No woman can build a most precious home who does not well understand that she must, for the crown that is set before her, cheerfully accept much labor, suffering and self sacrifice."

There are many qualifications necessary for a successful farmer's wife. She should be intelligent to be a successful housemaker. She must economize in time, strength and in a financial way. She should be progressive and aim to advance to a higher plane. She should cultivate the spirit of contentment. The farmer's wife should read more than she does; not only the daily papers, but magazines and books, that will broaden the mind and uplift the soul. Thought, reading and discussion educate us. Labor makes healthy thought and thought makes the laborer happy. The free delivery of mail, lecture courses and circulating libraries offer an opportunity for culture that our grandmothers never dreamed of.

The farmer's wife ought to be capable of meeting emergencies in case of sudden illness, croup, spasms or accidents; acting as a nurse or physician until one arrives.

The farmer's wife ought to know how to milk a cow, feed the poultry, harness and hitch up a horse. In case of a breakdown, the driver should always know how to remedy matters.

The farmer's wife needs exercise out of doors. Some get too much, while others get too little. A short walk taken daily is very healthful as well as restful. It detracts our minds and thoughts from the many petty trials and duties of daily life.

It is a good thing to belong to some organization outside of the church. Neighborhood sociability should be promoted by old-fashioned hospitality. Simplicity in entertaining is desirable. The women's clubs and the Woman's Christian Temperance Union are powers for good throughout the land, and afford new ideas and inspirations. To hear new voices and see new faces are as tonics to the mind. Bishop Lawrence, of Boston, said in one of his great sermons: "Anyone who is going to do the best work in this restless, pushing age must have a high appreciation of the sacredness, the value and the efficiency of the quiet of the home. We cannot forgive persons who give their time to society or industry and neglect the family and the home." Domestic misery, crime and intemperance can be traced to carelessly kept homes.

The woman's part as mother is the most sacred of all. No work is to be compared with that of molding a child's life. It is said, and truly said, "The hand that rocks the cradle rules the world." "How beautiful is youth, how bright it gleams with its illusions, aspirations and dreams," says the poet Longfellow. "How poor are they that have not patience." To learn patience with the little ones and an unselfish love and care for the family is true nobility and heroism. Patience, perseverance and unselfishness are woman's guiding stars.

The hope of America is in its homes. To them the future must look for the cultivation of the noblest traits of character. Home means much more at the present time than we sometimes realize. It means comfort, affection, sympathy, confidence, happiness and peace. It is that solitary yet lovable spot in the wilderness of the world of disappointment and care, where all the virtues and principles we were taught in infancy and youth are preserved.

"Breathes there a man with soul so dead, who never to himself has said, 'This is my own, my native land;' whose heart hath ne'er within him burned, as home his footsteps he hath turned?" The home should be studied and beautified and filled with content and gladness. Let the home be a hospitable one, where friends are entertained and good nature and feeling abound. Home is a sacred kingdom. It is father's kingdom, the children's paradise and mother's world. After a well rounded day of labor at eventide the family gather around the open fire, father with his papers, mother and children with good books, music and games, happy in their own companionship, not omitting the corn poppings and taffy pulls which will often cause pleasant memories in after years as well as furnish much enjoyment to youthful hearts. To grow up in such an atmosphere inspires the youth with ideals and emotions which bar room literature does not appeal to. Defend the home and the flag is safe. Mother must be a companion and playmate with her children, a true and sympathetic friend. "The many make the household, but only one the home," says Lowell.

It is the part of every woman to be kind, forbearing, patient, loving, gentle, economical, appreciative and cheerful. Love the farm, the cabin home, the dignity and station that rightfully belong to those who dare to toil with their hands.

"No higher fate
For man can wait
    Than 'neath the overarching sky;
To sow and reap,
To till and keep
    The fertile fields that round him lie.
Small pleasure springs
From joys of kings,
    And happier is his lot by far

Whose life is spent
In sweet content
Where hearth and home and loved ones are."

Would you exchange your fertile acres and herds and flocks for a pile of brick in the rush and noise of city streets?

Let us not discourage farm life, although there may be some shadows. It has its bright side and it is the woman's part to help make it bright. Fulfilling the Scripture, "She looketh well to the ways of her household."

"WATERWORKS IN OUR HOME."

BY MRS. J. C. JOHNSTON.

[Read at the Farmers' Institute held at Deshler, Ohio, February 8, 1908.]

Every country home should be provided with a system of waterworks. It is one of the greatest conveniences on the farm. It is a source of pleasure and profit to every member of the household, also a benefit to the stock, as they may go and drink clean, pure water when thirsty, as anyone may tell you who has the satisfaction of owning a complete system. Many farmers have only a partial system, and yet they find it a great convenience and benefit to the country home. What is meant by a complete system is to have both hard and soft water at various convenient places about the house. There are several systems in use; the latest are the pneumatic water system and the elevated tank system. The pneumatic system consists of an air tight steel tank placed in the cellar, or buried in the ground, or at any convenient place where it will not freeze, and the water is pumped into the tank. The water being heavier than the air, drives the air to the top of the tank and is confined there. By pumping water in the tank you create water pressure that you wish in the tank, and by drawing the water from the bottom you can force it a great distance, owing to the pressure in the tank. The tank may be placed in the cellar and water drawn with faucets at any point above for any purpose. By connecting it with a range boiler attached to the water front of any ordinary range, you can draw hot or cold water from the pressure tank below.

The elevated tank system consists of an ordinary tank, of size in proportion to amount of water used, elevated to sufficient height to create the pressure desired. The water is drawn from this tank to the various places to be used. A pressure house tank may be placed at some convenient point over a sink in the kitchen and all the well water that is pumped passes through the house tank to any of the other tanks, or to the elevated tank, thereby keeping the water always fresh in the house tank. At the other end of the same sink a pitcher spout or a kitchen force pump may be placed, and soft water pumped from the cistern, giving you both soft and hard water in the kitchen, thus providing a continuous water supply which can be used for household purposes, for fire protection, for the bath room, the lavatories, and, in fact, there is no limit to the conveniences which this style of an outfit can be made to supply. One of these outfits can only be appreciated by those who have used them, or have had the advantage of a perfect city water system. These outfits enable the farmer to provide himself with a water supply superior to the city waterworks, from the fact that you know what kind of water you are using and at very little cost; in fact so small that the interest on the money invested amounts to very much less than the city resident pays for his water rent. Besides, it will furnish you water for your stock, your barn, your garden, your lawn and, in fact, for any purpose that water can be used. You can run the water in your kitchen and you can have a bath room in your home just as well as though you were living in the city and paying a water tax to some corporation, and you will have an outfit which will be an ornament to your property and enhance its value. It works every day in the year, and a good system should last at least twenty-five years. It is money well spent, as it is a source of pleasure and satisfaction to both young and old. There are two things the boy on the farm doesn't like to do. One is turning the grindstone and the other is pumping water. Besides, the stock is ofttimes neglected on account of the tiresome job of pumping water.

After you have an outfit erected your water supply will cost you little or nothing as compared to the high water tax that is charged by cities and villages.

By providing suitable sewerage, there is no good reason why every good country resident should not enjoy the bath, the closet and, in fact, every convenience which his city neighbor enjoys and finds necessary to his general health and cleanliness. People who live in the city and who only have ten to twelve dollars a week jobs, enjoy all of these comforts of life and don't even own the homes they live in. The farmer who owns his own home and who works as hard, or harder, than any other class, in many instances, is yet drawing the water he uses with the "Old oaken bucket."

Now the profitable thing for him to do, if he wishes to bring happiness to himself and family and benefit his stock, lawn, garden, etc., is to put in a system of some kind. The cost, of course, will depend on the style and kind of system installed. For example, you can get a wind mill and tower costing from forty-five dollars up, owing to the size, height and style. Wind mill pumps cost from three to fifteen dollars, kitchen pumps from one dollar and twenty-five cents to six dollars, pneumatic or elevated tanks cost from twenty-five to one hundred dollars, house tanks from five to fifteen dollars, bath tubs from five to fifty dollars, closets from seven to twenty-five dollars, lavatories or wash stands from three to twenty dollars. Fixtures for the above are usually included in the prices quoted; pipe is usually sold by the foot, and the price varies, owing to the demand. However, the average farm job, as is usually put up, costs from seventy-five to one hundred and twenty-five dollars, although ofttimes for a small additional cost the system can be made much more effective and more convenient, and you never miss the additional cost, owing to the extra convenience and benefit you would derive therefrom.

The pneumatic or elevated tank systems cost approximately from one hundred and fifty to two hundred and fifty dollars. The requirements of each individual purchaser of a system of waterworks are so different and the lines so varied, that it is impossible for me to make up a list of requirements to suit all purchasers. Possibly the better plan would be to have a man of experience in that line to call and make an estimate of what you will need, and he can and will make you some valuable suggestions. At any rate, this was our experience in purchasing our own system. We have a very good system and would not know how to get along without it and, in fact, would not take many times its cost and go back to the old way of getting water.

"WHEN THE FARMER COMES INTO HIS OWN."

MRS. W. C. KOHLER, KENTON, OHIO.

[Read at the Farmers' Institute held at Kenton, Ohio, January 6, 1908.]

Once in a while we read of some heir to a throne deliberately giving up his privileges and rights, and we wonder what sort of material he must be made of. Carelessness, indifference, a desire to shirk his responsibilities, any one of a dozen or more reasons may move him to put aside his great opportunities and allow some one else to take his place, and he feels sure he is missing nothing by so doing. Very often it happens that people put aside lightly the great inheritance of life, thinking it too much trouble to take it with its responsibilities and blessings, and are content to live on a very low plane until they drop out of existence. "Too much trouble" is the common excuse of mankind, so the finest things of life are never enjoyed simply because we are forever living beneath our privileges.

And what is true of mankind in general is true of farmers in particular. If ever a class of people lived beneath its privileges, it surely is the rural population. "Heirs of all the ages," they deliberately set aside their high rank and never feel the loss of the inheritance they put by so lightly. It is always an unhappy state of affairs when people do not know, but when they do not know that they do not know, the situation is hopeless. A man who is ignorant may learn if he possesses a willing mind, but the man who is ignorant and refuses to believe that he does not know, can never be helped. He is beyond the reach of all aid. There are men and women all over the country who are merely asleep and need to be awakened, but there are others who pride themselves on their lack of wisdom and so place themselves beyond the reach of help.

Take the subject of orchards for example. A drive through the country will show one farm well stocked with fine fruits for family use and the market, while the very next place is entirely devoid of fruit trees. O, there may be a few snaggy, untrimmed old apple trees, planted by some former owner, that are suffered to remain because they furnish a roosting place for the few scared fowls, but there is really no orchard. If there are any children on the farm they early learn to steal from the neighbors' fruit trees, but the parents never dream of setting out an orchard for themselves. They will argue that it doesn't pay to tinker with fruit, and the land can be more profitably employed raising corn or wheat and the money used to buy the fruit for family use. However that may be, the money is seldom used to buy fruit. The wife and mother picks what berries she can around the fence rows and the family does without all the good things that might be had in abundance. A small plot of strawberries, currants and berries, together with a well kept orchard, would not overwork the farmer, but he refuses to see that he is missing one of the great blessings of farm life by doing without fruit.

Some farmers will tell you it costs too much to buy trees, so they are forced to do without fruits. They should take lessons from the courageous ladies who have begged plum sprouts from the neighbors, planted cuttings of grape vines and currant bushes, saved the seeds from fine peaches, and in various other ways set up a little fruit business of their own, when their husbands were too stingy or too prejudiced to undertake the work. Not an ideal way to get fruit, perhaps, but it was the little leaven that in time leavened the whole lump, and shamed the man of the house into buying a few trees. Every man should consider it his duty to plant trees wherever he goes, for a farm without fruit is desolate indeed. Everyone knows that orchards add to the value of a farm, but not every farmer has profited by this knowledge.

In many country communities education receives little attention, yet there are few farmers not directly concerned with this important subject. Scarcely one farmer in a hundred ever goes to school to see how things are getting along, yet the boys and girls are the most important crop on any farm. It takes hard work to get the fathers and mothers together for a picnic on the last day, and as for coaxing them to come on ordinary occasions, that is out of the question. If the teacher doesn't happen to suit the children, the parents express their opinions very freely, but when it comes to speaking a good word for her or encouraging her by a visit, that is too much trouble. The money spent for teachers in most townships, together with all other school expenses, would provide a township school building and carry the children to it in comfortable wagons, but it takes years of agitation to accomplish such things. "What was good enough for my father is good enough for me," is the motto of many farmers. Talk about ancestor worship in China! We have some phases of it right here in Ohio in connection with school work. The centralized school is not perfect, but it is a step in the right direction, and gives the bright boys and girls a chance for higher education right in their own townships. What is to be thought of men and women who are not anxious to make progress? If they really informed themselves on the subject and knew why they were arguing for separate schools, it would not be so absurd, but when it is only a case of sticking to old customs, it surely is unreasonable.

Many boys and girls in the country are eager for advanced studies, but their parents are refusing to allow them to go on. "You don't need much book learning to count up butter and egg money," said a country mother recently to her bright daughter. "Your pa and I never went to school after we were fifteen, so why should you?" Is it any wonder bright young people plan to leave such homes? There are fathers and mothers who deliberately mispronounce words and take pride in their contempt for education, thinking to impress the young folks with their great superiority, but they only succeed in doing something far different.

When it comes to church life, in country neighborhoods, there is much to be desired. The first thing a man mentions when he wants to sell a farm near a country church, is that it is "handy to meetin'," but it might as well be miles away as far as it concerns his life. On Sunday he strolls off to a neighbor to trade doubtful stories, and the church seldom is honored by his presence, unless a funeral is announced. There might be better preaching and more effective service and better music in many country churches if only the people of the neighborhood supported them. It is too much trouble to dress up on Sunday for services, or they manage to get up a mild little feud with some member that furnishes the shadow of an excuse for non-attendance, and the church languishes. What might be a city set upon a hill in the community, becomes a struggling little light in the midst of darkness, and the few weary workers are all but totally discouraged as they see people with time for visiting, entertaining, baseball, fishing and loafing, but no time for God and His cause. The man who hesitates to buy a farm where there is not a live country church supported by live, intelligent people, is doing the right thing. If people will not keep up the country churches because they are loyal to God, they will have to learn that a neighborhood without a church is far below the standard, financially. Perhaps when pocketbooks are touched there may be an awakening on this subject.

Social life on the farm has long been the theme of novelists and newspaper reporters. We have read again and again of the utter loneliness, the drudgery, the isolation, the poor fare, the absence of social life, and everything else, until we are familiar with their statements. And they are true to a certain extent. We have men and women in every community who absolutely refuse to live any but lonely, unhappy lives. It is unfair to judge the whole community by what part of its members are, but there is no denying that there are drudges in the country. There are women who actually take pride in wearing ragged, unwomanly garments and allowing their hair to go uncombed from morning till night. Their whole conversation runs to the amount of work they do, and they call the clean, orderly housekeepers of the neighborhood shiftless, because it is a part of their creed that it is time wasted to dress up. Some women have no higher ambition, seemingly, than to tell that they "did not sit down all day except to eat my meals." They are too busy to help with church work, the Grange, picnics and all the other things that make life in the country sweet and pleasant. There may not be as much going on in the country as in town, but no country communuity need be without wholesome social joys. It has been remarked time and again that the country people who move to town go right into church work and social life, so they must be made of the same clay and have about the same qualifications as their city brethren. The majority of country folks are too distressingly humble, anyway, and feel that it isn't worth while to undertake anything in the way of entertainment because it will surely fail. Anyone who has ever worked to get up a concert or social in a country community can testify to the amount of coaxing and begging necessary to induce men and women and children to help along with the undertaking. The country ladies, especially, are living far beneath their social privileges.

And now someone will surely say that this is a very dark picture of farm life. On the contrary, it is a very hopeful one. The men and women who are gathered here are the ones who will say at once that they have neighbors who answer these descriptions perfectly. And the men and women here today are the ones who are acting as missionaries to bring other men and women to a knowledge of the joys of country life. The church, the Grange, the schools, the farm papers and many other agencies are at work striving to awaken the farmers and their families to a sense of their high inheritance, and are urging them to "go up and possess the land" at once. One discouraged worker gave it as his opinion that there was no use trying to educate the adults. "Let them alone till they die off," was his advice, "but look after the children." But even an adult is converted to right methods occasionally, and it pays to keep on trying. One of these days the dark homes will be opened to the sunlight, the living rooms really made to live in, the grounds made beautiful and profitable with flowers and fruits and shrubs, the church will be exalted to its proper place, the schools receive the attention they need and the social life shared by every member of the community when the farmer comes into his own. It will no longer be too much trouble to assume the responsibilities of his position, and he will enter upon his inheritance with joy. May that time soon come!

Ohio Department of Agriculture

Division of Nursery and Orchard Inspection

Sixth Annual Report of
the Chief Inspector

Ohio Department of Agriculture,
Columbus, Ohio, December 31, 1907.

To His Excellency, Andrew L. Harris, Governor of Ohio:

Sir:—In compliance with the law I herewith submit the report of the Nursery and Orchard Inspection for the year 1907.

This contains a brief synopsis of the work done by this Department. While the work has been a success, and much good has been accomplished, we have been handicapped to some extent by being compelled to change Chief Inspectors twice within the past year. This was caused by the demand from other States offering more salary than the State Board feel justified in paying.

Respectfully submitted,

OHIO STATE BOARD OF AGRICULTURE,
T. L. Calvert, *Secretary.*

SIXTH ANNUAL REPORT OF THE CHIEF INSPECTOR OF NURSERIES AND ORCHARDS.

OHIO DEPARTMENT OF AGRICULTURE,
DIVISION OF NURSERY AND ORCHARD INSPECTION,

COLUMBUS, OHIO, December 31, 1907.

HON. T. L. CALVERT, *Secretary of the Ohio State Board of Agriculture:*

SIR:—I herewith submit the sixth annual report of the Division of Nursery and Orchard Inspection, covering the operations for the year of 1907.

The work of this division has been rather unsettled on account of the change of Chief Inspectors. Mr. A. F. Burgess handed in his resignation as Chief Inspector on March 1st, and it was not until April 1st that Mr. C. W. Mally, his successor, took charge of the inspection. In the intervening period the work was carried on under your supervision.

Mr. C. W. Mally continued as Chief Inspector until November 1st, when he resigned and the work was left in my charge as Acting Chief Inspector.

With your approval the following deputy inspectors were appointed for the regular summer inspection during July and August: Messrs. J. C. Hambleton, J. B. Parker, L. L. Scott, Edmund Kinney, F. N. Fagan, James Zimmer, M. F. Osborn and Harry Evans. For the fall fumigating work Messrs. N. E. Shaw, Frank Heckathorn, E. W. Mendenhall and R. Emerson Betz were appointed and with the exception of Mr. Betz, continue in the service of this division.

The inspection during the past year has been carried on along the same line as in previous years, especial attention being given to San Jose scale, peach yellows and black knot.

The regular summer inspection was started July 1st, the policy for the eradication of San Jose scale from the nurseries being to inspect the nurseries thoroughly, destroying all infested stock, making charts of all infested blocks, and requiring the nurserymen to spray such blocks where infestations were found. During the early part of the season kerosene emulsion was used, while during the latter part the use of diluted lime-sulphur wash was ordered.

The success of the latter as a summer spray for the combating of San Jose scale in the nursery during August and September was established without a doubt, the wash being either applied with brushes or as a spray causing only slight injury to the foliage.

The fumigation work began the first week of September and as far as possible was carried on under our direct supervision. During the packing season we devoted a great deal of our time re-inspecting suspicious blocks, breaking out all infested stock before it was taken to the packing house. This with the usual inspection at the fumigatorium reduced the chances of shipping infested stock to a minimum.

Each nurseryman was required to fumigate all stock with hydrocyanic acid gas if any San Jose Scale was found in or dangerously near the growing stock.

With only a few exceptions, the nurserymen of Ohio gave us their hearty co-operation in our endeavor to destroy all infested stock either before or after being fumigated.

Since the close of the packing season we are devoting as much time as possible to the winter inspection of nurseries. At this time of the year with the foliage off the trees, a very thorough inspection of the growing stock and premises is made possible. The nurseries are being carefully inspected, any infested stock destroyed and the nurserymen ordered to spray all such blocks during the winter with the lime-sulphur wash, and again before digging time if necessary. After eradicating the sources of infestation at this time of the year, and with subsequent spraying the Ohio nurseries can be apparently freed from San Jose scale.

All peach trees on or near the nurseries were carefully inspected and any trees showing signs of peach yellows were ordered removed and burned at once.

The disease is more prevalent in eastern and southeastern Ohio and very few orchards in this section of the State are free from the disease.

The damage done by the oyster shell scale was very marked, especially in the lake regions on poplars, maples, etc. The city of Cleveland has prohibited the setting of Carolina poplars in the city limits, chiefly on account of this pest.

The ravages of the white-marked tussock moth were seen over the entire State, damage being done to nursery stock and shade trees, chiefly on the maple in various cities. In one section of the city of Chillicothe, for example, nearly every maple tree was stripped of its foliage.

The apple datana was another troublesome pest to some of the nurserymen of this State, being especially abundant in many localities, stripping the leaves from entire blocks where no treatment was resorted to.

The damage caused by crown gall and woolly aphis is becoming more marked each year. In some sections the loss has amounted to fifty per cent. of the stock grown. Many remedies have been tried by the growers, but so far no practical remedy is now in use. The practice has been for years to simply discard such worthless trees at the time of fumigation.

NURSERY INSPECTION.

During the period from January 1 to July 1, 1907, nineteen certificates of inspection were issued, and the cost of the inspections were collected from the owners.

Applications received by July 1st, 1907	591
Applications received after July 1st, 1907	28
Certificates of inspection issued	571
Certificates of inspection refused or held for later consideration	43

The twenty-eight nurserymen who failed to get their applications on file in this office before July 1, 1907, were charged the cost of inspection in each case.

A total of 5,315 acres of growing nursery stock was examined during the inspection and the following number of orchard trees on nursery premises have been destroyed by the owners as ordered by this division:

Trees destroyed for San Jose scale	291
Trees destroyed for peach yellows	781
Trees destroyed for black knot	123
Total	1,195

The following list of nursery stock was condemned by the inspectors, and destroyed by the owners during the period of inspection and fumigation:

Fruit trees infested with San Jose scale	32,129
Shade and ornamental trees infested with San Jose scale	1,590
Trees infested with scurfy scale	1,029
Fruit trees infested with woolly aphis and crown gall	3,733
Shrubs infested with San Jose scale	520
Total	39,001

The same trouble was experienced this year in endeavoring to clean up the infested orchards and premises adjacent to growing nursery stock, which is a chief source of infestation by San Jose scale. The present law makes no provision for the treatment of such neighboring infested trees, unless the nurserymen file an application for the inspection of the same, and this many refuse to do, preferring financial loss rather than lose the friendship of their neighbors.

Several complaints have been received at this office from different nurserymen who claimed that uncalled for destruction of stock was resorted to by order of the Chief Inspector, stating that it seemed wanton destruction of property to reject trees only slightly infested with San Jose scale, which later would be carefully fumigated under our supervision. But the present law clearly states that all stock must be apparently free from San Jose scale, and of course no other policy could be adopted.

FUMIGATION.

A complete inspection and test was made of all fumigating houses and when not found practically air tight were overhauled at once by the owner.

All houses were given a severe smoke test. A very heavy smudge was made in the house and all doors closed for at least thirty minutes; any small leaks could then easily be discovered.

Twelve certificates were issued during the year to nurserymen holding certificates of inspection.

It was the policy of Chief Inspector Mally to order the fumigation of all nursery stock when the presence of San Jose scale was found in any part of the nursery. This was a safeguard for the prevention of the shipment of any live scale that may have been overlooked by the inspectors.

The following list of nursery stock was fumigated under the direction and supervision of this division:

Fruit trees	1,730,100
Shade and ornamental trees	96,428
Shrubs	482,875
Plants (raspberries, blackberries, etc.)	477,791
Vines (grapes, etc.)	231,909
Total	3,019,103

Nurserymen are urged to fumigate all buds, grafts or scions which they use in the nursery, as by so doing infestation may be prevented. A good many nurserymen have included this fumigation in their regular routine, and regard it as a very valuable practice.

Observations by this division have established the fact that at least fifty per cent. of the infestations of San Jose Scale have been introduced into the nursery blocks on the bud, scion or graft.

ORCHARD INSPECTION.

It has usually been found more convenient to take up the orchard inspection work during the late winter and early spring months before the rush of nursery work began. On account of an insufficient force of inspectors during this period of the year, not as many orchards have been examined as in former years.

The number of petitions for inspection received is far in excess of the number received during any previous years, amounting to one hundred and sixteen and representing practically every section of the State, coming from twenty-nine counties as follows: Adams, Belmont, Clermont, Darke, Defiance, Erie, Fairfield, Franklin, Fulton, Greene, Hamilton, Holmes, Huron, Jackson, Lake, Lawrence, Lorain, Mahoning, Miami, Montgomery, Ottawa, Richland, Sandusky, Scioto, Tuscarawas, Union, Wayne, Williams and Wood.

Of the one hundred and sixteen petitions on file, fifty-three have been looked up by the inspectors.

The following list shows the number of trees treated and destroyed as a result of these inspections:

	Destroyed.	Treated.	
For black knot	17	.....	Trees
For peach yellows	100	.....	Trees
For San Jose scale	181	38,226	Trees
Total	298	38,226	

It is very encouraging to note the growth of this branch of the inspection work, and the interest which orchardists take in learning the condition of their trees speaks well for the future horticultural interests of the State. In many cases petitions for inspection are received for orchards which have been but recently planted. This is done by the grower as a precautionary measure, and if any dangerous pest is present he is enabled to apply remedial measures before serious damage has resulted.

Several petitions received this year are from parties desiring a reinspection in order that they may determine the results of treatment given, and to learn whether or not the pest has been destroyed or held in check.

These facts show very clearly that orchardists appreciate the work of the Department and in the future it will undoubtedly grow to greater proportions and usefulness.

Respectfully submitted,

WM. E. EVANS, JR.,
Acting Chief Inspector

LIST OF OHIO NURSERYMEN

1907—1908.

Name and Address of Owner.	Name of Nursery.	Cert. No.	Kind of Stock.	Acres of Stock.
Ables, Perry, R. R. 2, Cheshire, O		1	Raspberry plants	1½
Albaugh, N. H., Phoneton, O		467	General nursery stock	110
Aleshire, Horace, Rutland, O		2	Raspberry plants	1
Allen, W. A., R. D. 3, Geneva, O	Woodbine Nursery	524 *3	General nursery stock	12
Alspach, J. W., Carroll, O		407	General nursery stock	7
American Rose & Plant Co., Opha Jackson, Manager, Springfield, O		3	Roses and greenhouse plants	½
Ankrom, J. D., Stella, O		365	Fruit trees	½
Armstrong, R. W., Elkton, O		4	Berry plants	13
Ashford, J. C., Rogers, O		5	Berry plants and vines	10
Atkins, E. C., Painesville, O		556	Fruit trees	1
Aultfather, H. H., Minerva, O		558	Berry plants	9
Bailey, A. E., Ansonia, O		439	Shade trees and berry plants	4
Bailey, S. E., R. R. 1, Pomeroy, O		6	Strawberry plants	1
Bailey, W. W., Yellow Springs, O	Yellow Springs Fruit Farm	7	Blackberry plants	6
Baird & Brady, Troy, O	Eureka Nursery	500	General nursery stock	12
Baker, C. V., Stoutsville, O	Wildwood Fruit Farm	9	General nursery stock	5
Baker, Ellsworth, R. R. 3, Barnesville, O		8	Raspberry plants	2
Baker, Harvey, Washingtonville, O		10	Strawberry plants	½
Barb, J. S., Spokane, O		575	Blackberry plants	?
Barker, J. H., R. R. 1, Middleport, O		359	Berry plants	5
Barnes, M., & Co., R. R. 3, Mt. Healthy, O	Barnes Nursery	442	General nursery stock	50
Barnes, T. J., & Sons, R. R. 1, Sandusky, O	Sandusky Nursery	468	Ornamentals and fruit trees	1
Barnes, J. A., R. R. 2, Lisbon, O		12	Berry plants	3
Barnes, A., & Son, R. R. 4, Hamilton, O		444	General nursery stock	20
Barnhart, J. K. & A. C., Springfield, O		11	Berry plants	2
Barr, A. C., Fredericktown, O		402	Berry plants	1
Barth, J. F., New Bremen, O		490	Fruit and berry plants	½
Barton, R. A., R. R. 5, Jackson, O		491	Berry plants	6

*Fumigation Certificate.

Basinger, John H., Calla, O.		13	Berry plants	4
Beck & Beck, Piqua, O.	Echo Inn Nursery	530	Ornamental and fruit trees	3½
Bechtol, Jos. & Son, R. F. D., Greenville, O.		14	Fruit trees	6
Beckley, J. N., R. D. 2, Rutland, O.	Beech Grove Nursery	17	Berry plants	4¼
Beekley, C. E., West Salem, O.		472	Berry plants	2
Bell, Simon, & Son, R. R. 3, Junction City, Ohio	Monday Creek Stock and Product Farm	15	Berry plants	½
Benner, J. H., & Sons, R. R. 3, Johnstown, O	Mulberry Row Nursery	465	General nursery stock	¼
Benson, Clark, New Carlisle, O.		498	Berry plants	3
Benson, A. R., New Carlisle, O.		16	Berry plants	1
Bercher, Geo. W., Morgantown, O		428	Fruit trees	2
Bernard, A. F., Painesville, O.	Rosemont Nursery	541	Ornamental trees and shrubs	9
Bernard, F. F., Painesville, O.	Fairport Nursery	18	Fruit trees and roses	7
Berry, P. D., R. R. 3, Dayton, O.		505	Berry plants	60
Berry, J. C., Bremen, O		523	Berry plants and fruit trees	3
Bertolette, Glen, Columbiana, O.		19	Berry plants	1
Betscher, C., Canal Dover, O.		20	General nursery stock	20
Bigler, Jos., Orrville, O.		22	Berry plants	1
Bigelow, E., Copley, O		21	Berry plants	8
Binnig, F. W., R. R. 1, Painesville, O.		23	Berry plants and fruit trees	1
Birch, J. B., Carrollton, O.	Birch Nursery	414	General nursery stock	10
Bissell, Roy G., R. R. 2, Seville, O.		571	Berry plants	2
Black, R. J., Prop., R. R. 1, Bremen, O.	Black's Nursery	24	Berry plants and fruit trees	10
Blosser, Frank, Bremen, O.		25	Berry plants	2½
Bodiker, W. E., R. R. 5, New Carlisle, O.		26	Berry plants	5
Bohlender, Peter & Son, Phoneton, O.	Springhill Nursery	446 *4	General nursery stock	90
Boyce, M. C., Kyger, O		24	Berry plants	1
Bork, Philip H., R. R. 2, Tiffin, O.		380	Fruit trees	1
Botkin, S. C., R. R. 4, New Carlisle, O.	Bethel Fruit Farm	28	Berry plants	3
Bowmaster, Frank, Tippecanoe City, O.	Olive Hill Nursery	29	Fruit trees and hedge plants	2
Brammer, Averal, Essex, O.		406	Berry plants	4
Brewster, E. M., Perry, O	Brewster's Nursery	332	General nursery stock	8
Brookhart, S. A., R. R. 3, Wapakoneta, O.	Variety Fruit Farm	30	Fruit trees and berry plants	?
Brosius, T. G., Tiffin, O		379	Shade trees	2
Broughton, E. J., Independence, O		31	Berry plants	3
Brown, Chas. C., R. R. 3, Cardington, O.	Evergreen Farm	32	Berry plants	1
Brown Bros., R. R. 2, Yellow Springs, O.	Farmers' Exchange Nursery	401	General nursery stock	3
Brown, C. F., Rossburg, O.		545	Shade trees	3

*Fumigation Certificate.

LIST OF OHIO NURSERYMEN—Continued.

Name and Address of Owner.	Name of Nursery.	Cert. No.	Kind of Stock.	Acres of Stock.
Bucher, Geo. S., R. R. 1, New Carlisle, O.		33	Berry plants	2
Buechley, E. M., R. R. 8, Greenville, O.	Buechley's Nursery	34	General nursery stock	2
Buechley & Butts, Clayton, O.	Salem Nurseries	35	General nursery stock	13
Bull & Sutton, St. Paris, O	Champaign Nursery	461 *9	Berry plants, fruit trees and currants	1
Bundy, F. R., Tacoma, O		508	Fruit trees and berry plants	2
Buren, Andrew V., R. R. 3, Bremen, O.		409	Berry plants	2
Burton, J. S., Casstown, O.	Hill Top Nursery	36	General nursery stock	1
Buskirk Bros., Independence, O		483	Fruit trees and ornamental shrubs	16
Butler, Walter, Chillicothe, O		313	General nursery stock	½
Cain, James G., R. R. 1, Marietta, O.	Sand Hill Nursery	565	Fruit trees	3
Call, S. W., Perry, O.	Call's Nurseries	488	General nursery stock	100
Campbell, Chas., Langsville. O		37	Berry plants	2
Campbell, L. W., R. R. 4, Barnesville, O		38	Berry plants	3
Campfield, M. L., R. R. 3, Bremen, O.		39	Berry plants	3
Cannon, Asbury, Saltillo, O.		355	General nursery stock	1
Carico, J. H., Sheridan, O		40	Berry plants	5
Carey, M. L., R. R. 1, Trotwood, O.		447	Fruit trees	6
Carle, Edw. L., Geneva, O.		43	Berry plants	1
Carr's, M. L., Sons, Yellow Springs, O		44	General nursery stock	40
Carr, L. W., No. 3360 Detroit St., Cleveland, Ohio	Lakewood Nursery	400	Ornamental trees	⅓
Carson, Wm., & Sons, R. R. 1, Middleport, O	Carson Nursery	425	Berry plants	20
Cassel Nursery Co., Mesh Cassel, Manager, Lakewood, Cleveland, O.		549	General nursery stock	17
Cassidy, J. W., Augusta, O		41	Berry plants	6
Chalfant, J. W., & Son, R. R. 1, Centerburg, Ohio	Clear View Fruit Farm	469	Berry plants	½
Champion, H. J., Perry, O.		484	General nursery stock	20
Chapman, T. W., Perry, O.		45	Berry plants	2½
Chappell & Son, Garrettsville, O.		46	Berry plants	2
Clayton, T. J., & Son, R. R. 1, Croton, O.		527	Berry plants	2
Coffee, John C., Salem, O.		47	Berry plants	5
Cohen, Ross, Xenia, O		48	Berry plants	16

*Fumigation Certificate.

Coleas & Dollison, Quaker City, O.		49	Berry plants	7
Cole, W. B., Painesville, O.	Avenue Nursery	550 *5	General nursery stock	125
Conrad, W. H., Troy, O.	Summit Nurseries	51	Ornamental trees and shrubs	⅛
Cook, J. H., & Son, R. R. 2, Perry, O.		50	Berry plants	4
Cope, Eliphas, Rogers, O.	Rogers Nursery	52	General nursery stock	10
Cope, James, R. R. 1, Elkton, O.		53	Berry plants	8
Cope, H. D., & Sons, Rogers, O.	Quaker Valley Fruit Farm	54	Berry plants	8
Cope, Lycurgus, R. R. 1, Elkton, O.		55	Berry plants	10
Cope, W. G., Beloit, O.	Quaker Hill Nursery	56	Berry plants	55
Coughenour, Edw., R.R. 1, Bidwell, O.		42	Berry plants	1
Cowen, Ellsworth, Barnesville, O.		57	Berry plants	20
Cowen, Robert, Barnesville, O.		58	Berry plants	2
Cox, E. G., R. R. 1, Rockwood, O.	Ensee Nursery	318	Fruit trees	1
Craven, C. D., R. R. 3, Cardington, O.	Alum Creek Fruit Farm	59	Berry plants	1
Crawford, Milton, Salem, O.		339	Berry plants	8
Crawford, M. C., The, Cuyahoga Falls, O.		60	Berry plants	8
Crawford, John H., Rogers, O.		336	Berry plants	6
Crow, Willis, Kitts Hill, O.		61	Berry plants	6
Crow & Wolf, Fidelity, O.		528	Fruit trees	14
Cup, J. B., R. R. 3, Columbiana, O.	Quality Hill Fruit Farm	62	Berry plants	3
Cummins & Bowen, Vales Mills, O.		364	General nursery stock	½
Curry, C. M., R. R. 1, Bayard, O.		416	Berry plants	2
Davis, Russell, R. R. 4, Xenia, O.		63	Berry plants	1
Day, John, Fremont, O.	Fremont Nursery	479	General nursery stock	20
Dearing, Mrs. Amy, Dearing, O.		404	Berry plants	1
Delong, Jacob, R. R. 5, Lancaster, O.		64	Berry plants	5
Dern, Geo. E., R. R. 3, Dayton, O.		80	Berry plants	1½
Detrick, Stephen, R. R. 2, Osborn, O.		65	Berry plants and currants	5
Deweese, Thomas, R.R. 1, Barnesville, O.		66	Berry plants	2
Dillon, Dick, Yellow Springs, O.		67	Berry plants	5
Donnally, Chas. W., R. R. 1, Crown City, O.		68	Berry plants	10
Dowler, Evan, New Madison, O.		69	Catalpa seedlings	1
Dyer, John W., R. R. 1, Spencers Station, O		516	Berry plants	12
Dysinger, Wm., Tippecanoe, City, O.		433	Berry plants and fruit trees	27
Earhart, W. H., Lexington, O.		70	Berry plants and fruit trees	½
Eblin, A. H., Rutland, O.		71	Berry plants	3
Edgerton, W. D., R. R. 1, Barnesville, O.		522	Berry plants	5
Eliker, J. H., Van Wert, O.		72	Berry plants	1½
Elleman, Isaac, West Milton, O.		73	Berry plants	2

LIST OF OHIO NURSERYMEN—Continued.

Name and Address of Owner.	Name of Nursery.	Cert. No.	Kind of Stock.	Acres of Stock.
Elsea, C. R., Lithopolis, O.	Chestnut Ridge Nursery	497	General nursery stock	11
Ely, T. C., West Mansfield, O.		74	Berry plants	?
Ely, W. C., R. R. 2, Cheshire, O.		75	Berry plants	3
Emmons, E. S., Millport, O.		76	Berry plants	6½
English, J. R., Ironton, O.	English Nursery	77	Fruit trees	1/16
Ernst, Chas., Moscow, O.	Moscow Nursery	551	Fruit and poplar trees	8
Essig, Oliver, R. R. 3, Ravenna, O.		509	Berry plants	¾
Evans, Geo., Beaver Pond, O.		78	Fruit trees	¼
Evans, Geo. W., R. R. 3, Dayton, O.		534	Berry plants and currants	9
Ewart, Mortimer, Mogadore, O.		302	Berry plants	1½
Ewing, John T., R. R. 1, Pomeroy, O.		79	Berry plants	1
Fall, J. C., Eaton, O.		81	Grape vines	⅛
Faloon, J. O., & Pottorf Bros., Kensington, O		82	Berry plants	12
Farmers' Nursery Co., T. J. Dinsmore, President, Tippecanoe City, O.		368 *6	General nursery stock	156
Farnsworth, W. W., Waterville, O.	Clover Leaf Fruit Farm	559	Berry plants	7
Fauver, Irving C., R. R., West Dover, O.		83	Berry plants	½
Feitshaus, Bros., Verona, O.		263	Berry plants	1½
Fessenden, I. F., Norwalk, O.		84	Berry plants	2
Finck, David, Somerset, O.		410	General nursery stock	1
Finney, T. T., Millersburg, O.	Edgewood Nursery	475	General nursery stock	8
Flohr, Manasses, New Springfield, O.	Pleasant Valley Fruit Farm	85	Berry plants	3
Ford Seed Co., Ravenna, O.		312	General nursery stock	2
Fox, A. B., Greenspring, O.		86	Berry plants	1
Fox, John, & Son, Covington, O.	Greenville Creek Nursery	87	General nursery stock	6
Frantz, E. B., & Co., Cedarville, O.	Tecumseh Nursery	440	General nursery stock	10
Frantz, F. B., R. R. 1, Springfield, O.		88	Berry plants	4
Franz, C., & Sons, Cozaddale, O.	Cozaddale Nurseries	445	General nursery stock	3
Franz, G. D., Cozaddale, O.		511	Berry plants and fruit trees	5
Freeman, Mrs. A. D., & Son, Phoneton, O.	Poplar Grove Nursery	436	Fruit trees	60
French, A. B., Clyde, O.	French Nursery	373	General nursery stock	5
Fretz, Arthur, Canal Dover, O.		349	Berry plants and fruit trees	2
Friesner, J. D., R. R. 1, Lancaster, O.	Pleasant Ridge Nursery	90	General nursery stock	10

*Fumigation Certificate.

Funderburg, J. C., New Carlisle, O.		89	Berry plants	2
Gallatin, A. W., Minerva, O.		91	Berry plants	½
Gantz, E. J., Brandt, O.		548	Berry plants and fruit trees	20
Gantz, M. L., R. R. 1, Tippecanoe City, O.		92	Berry plants	4
Gantz, Vesta C., R. R. 1, Tippecanoe City, O.		93	General nursery stock	4
Gatton Bros., Belleville, O.		471	Berry plants	10
Geib, Chas. H., R. R. 2, Kensington, O.		96	Berry plants	2
George, Hamilton, Bremen, O.		354	Berry plants	3
George, James A., Cardington, O.		375	Berry plants	1½
Gessaman, S. G., Phoneton, O.		449	Fruit trees	15
Geyer, P. B., R. R. 32, Norwich, O.		94	Fruit trees	4
Geyer, J. L. & Son, Norwich, O.	Geyer's Nursery	95	General nursery stock	1½
Gillet, G. W., R. R. 4, Wellington, O.		98	Berry plants and catalpa	⅛
Gilliland, C. S., Pomeroy, O.		97	Berry plants	3
Goddard, Austin, Rogers, O.		99	Berry plants	½
Goddard, Joseph H., R. R. 1, Negley, O.		100	Berry plants	6
Gomer, W. H., Langsville, O.		529	Berry plants	1½
Good & Reese Co., The, Springfield, O.		101	Roses and greenhouse stock	¼
Gabriel, W. H., R.R. 3, West Mansfield, O.		385	Berry plants	4
Graham & Brickles, R. R. 1, Middleport, O.		102	Berry plants	4
Grapes, M. L., Dexter, O.		103	Berry plants	2
Grapes, R. L., Langsville, O.		518	Berry plants	2
Graves, Mrs. E. C., R. R. 1, Rock Creek, O.		104	Berry plants	½
Graves, W. J., Painesville, O.		464	Fruit trees	½
Green, A., St. Clair, O.		105	Berry plants	2
Green, E. C., & Son, Medina, O.		106	Berry plants	2
Green, L. E., R. R. 1, Sharon Center, O.	Granger Nursery	420	Fruit and shade trees	10
Green, The L., & Son Co., Perry, O.	Western Reserve Nursery	466	General nursery stock	400
Greider, A. E., R. R. 4, New Carlisle, O.		107	Berry plants	2
Greider & Heade, Brandt, O.		432	General nursery stock	10
Grimes, W. B., Box 46, Rutland, O.		108	Berry plants	3
Grove, Frank S., Bremen, O.		109	Berry plants	1
Grove, M., North Lima, O.		110	Berry plants	1
Guynn, Ellis L., Glenrose, O.	Glenrose Nursery	494	Fruit and shade trees	2
Guynn, Wm. H., R. R. 2, Moscow, O.	Fruit Hill Nursery	512	Fruit trees	1½
Hagler, M. A., R. R. 6, Xenia, O.	Ridge View Nursery	517	Berry plants and fruit trees	2
Halderman, J. W., Brandt, O.	Brandt Nursery	450	General nursery stock	15
Halea, L. C., R. R. 3, Cardington, O.		123	Berry plants	3
Hall, F. M., R. R. 3, Bremen, O.		111	Berry plants	1½
Hall, Geo. W., R. R. 1, North Kenova, O.		320	Berry plants	¼

LIST OF OHIO NURSERYMEN—Continued.

Name and Adress of Owner.	Name of Nursery.	Cert. No.	Kind of Stock.	Acres of Stock.
Hamilton, Wm. G., Hendrysburg, O		455	General nursery stock	5
Hanauer, Frank J., Box 513, Dayton, O		562	Ornamental trees and shrubs	2½
Hanks, Geo. W., Montreal, O		330	Berry plants	1
Hanson, J. B., R. R. 1, Niles, O		112	Berry plants	1
Harbaugh, John C., & Sons, Brandt, O		434	Fruit trees and berry plants	25
Harington, Wm., Painesville, O		113	Berry plants	1½
Harris, Martin V., Salem, O		114	Berry plants	3
Harris, Thomas, R. R. 3, Cardington, O		115	Berry plants	2½
Harsh, D.D., & W.A. Gallaton, Minerva, O		116	Berry plants	2
Hartley, Alonzo, & Co., Troy, O	Hillside Nursery	117	Ornamental shrubs	10
Hartsook, W. A., Vinton, O		452	Berry plants	4
Hastings, J. C., North Kenova, O		329	Berry plants	2
Hathaway, Wick, Madison, O		118	Berry plants	10
Hathorn, John, R. R. 2, Rome, O	Brook Fruit Farm	119	Berry plants	4
Hatten, H. C. & F. M., New Carlisle, O	Gem Nursery	120	Berry plants	20
Haverland, B. H., Pleasant Run, O		441	Shade trees, berry plants and grape vines	3
Hawkins, J. K., R. R. 1, Kensington, O		121	Berry plants	5
Hawkins, W. W., Kensington, O		122	Berry plants	3½
Heberling, H. G. & Son, Cadiz, O		124	Berry plants	2
Heffner, C. L. V., Brandt, O		125	Berry plants	2
Heffner, W. E., & Co., Tippecanoe City, O.		519	Fruit trees	32
Heffner, Jacob V., R. R. 1, Tippecanoe City, Ohio		126	Fruit trees	1
Helsel, G. W., R. R. 1, Valley Crossing, O		482	General nursery stock	¼
Hemm, Geo., Sidney, O	Sidney Nurseries	127	General nursery stock	6½
Henderson, Geo. S., R.R. 1, Negley, O		128	Berry plants	5
Henry, David, Bayard, O		129	Berry plants	3
Herrick, D. R., Sta. F., Cincinnati, O	Jackson Nursery Co.	574	General nursery stock	30
Hess, R., Akron, O	Akron Nurseries	544	General nursery stock	3
Hickman, S. E., R. R. 1, Elkton, O		130	Berry plants	11
Hilyard, G. B., R. R. 3, Bremen, O		131	Berry plants	2
Hix, James, Cheshire, O		132	Berry plants	?
Hoffman, C. W., R. R. 13, Dayton, O		539	Fruit trees and shrubs	2

Hoffman, Mrs. L. F., R. R. 13, Dayton, O.	Stillwater Nursery	431	Fruit trees	4½
Holmes, Melvin, Bidwell, O.		426	Berry plants	4
Holt, J. B., Rutland, O.		133	Berry plants	4
Hoover, Wm., Tippecanoe City, O.		134	Berry plants	2
Horst, Ira C., Columbiana, O.		334	Berry plants	½
Hull, Bros., Painesville, O.		135	Berry plants	1
Hum, W. W., & Son, Columbiana, O.		136	Berry plants	2½
Humphreys, Geo. W., Andis, O.		137	Berry plants	11
Hunt, Louis, R. R. 1, Rockwood, O.	Hunt Brothers' Nursery	495	Fruit trees and berry plants	5
Huntley, Frank, R. R. 3, Vinton, O.		363	Berry plants	6
Huntley, Chas. S., Vinton, O.		362	Berry plants	6
Huntley, H. D., R. R. 3, Vinton, O.		453	Berry plants	4½
Huston, Benj., R. R. 1, Rogers, O.		138	Berry plants	8
Hutchison, Fred, Clyde, O.	Nickle Plate Fruit and Produce Farm	573	Berry plants	4
Imlay, John D., Zanesville, O.		342	Ornamental trees and shrubs	1
Jenkins, J., Winona, O.	Jenkins Nurseries	338	Ornamental trees and shrubs	20
Johnson, H. C., R. R. 8, Wilmington, O.		315	Fruit trees	¼
Johnston, J. L., R. R. 1, Langsville, O.		139	Berry plants	3
Jolliffe, Cyrus, Painesville, O.		463	Fruit trees and roses	2
Jones, B. W., R. R. 1, Bidwell, O.		501	Berry plants	5
Kaiser, Fred & Son, Athalia, O.		301	Fruit trees	1
Kellogg, C. F., Andover, O.		413	Berry plants	1½
Kelly, Irwin, Rock Camp, O.		140	Berry plants	2
Kennedy & Brailey, Middleport, O.		422	Berry plants	6
Keys, John, R. R. 1, Ironton, O.		510	Berry plants	4
Kibby, J. I., R. R. 4, Norwalk, O.		141	Fruit and shade trees	½
Kibler, Sherman, Bayard, O.		142	Berry plants	4
King, Frank, R. R. 3, New Carlisle, O.		143	Berry plants	3
Kinney, Thomas, Greenspring, O.		481	Berry plants	5
Kinsey, Wm. N., R. R. 1, Clayton, O.	Kinsey Nurseries	553	Ornamental trees and shrubs	5
Kitts, E. S., Kitts Hill, O.		403	Berry plants	3
Klingensmith, David, Washingtonville, O.		144	Berry plants	2½
Knapp, J. R., Point Rock, O.		427	Berry plants	2½
Knauf, Frank, Canfield, O.	Sunnyside Nursery	145	General nursery stock	4
Kohankie, Henry, R. R. 1, Painesville, O.	Euclid Avenue Nursery	366	General nursery stock	30
Kohankie, Martin, Painesville, O.		390	Ornamental trees and shrubs	10
Kreitzer, Isaac H., & Son, Tadmore, O.		430	Shade trees	7
Kumler, H. L., & Son, R. R. 1, Baltimore, O.		146	Berry plants	2
Landis, Webster, R. R. 3, Brookville, O.		147	Berry plants	1½

LIST OF OHIO NURSERYMEN—Continued.

Name and Address of Owner.	Name of Nursery.	Cert. No.	Kind of Stock.	Acres of Stock.
Langdon, Amos, Howell, O.		323	Berry plants	6
Langdon, Wesley, Howell, O.		324	Berry plants	4
Law, A. D., Delaware, O.		394	Berry plants	10
Law, H. E., R. R. 2, Delaware, O.		395	Berry plants and currants	4
Lawbaugh, W. J., R. R. 3, Ashland, O.		470	Berry plants	1½
Lawrence, Edw. S., Perry, O.		331	Berry plants	1½
Lawrence, U. G., R. R. 6, Marion, O.		374	Berry plants	6
Leffel, Elmer L., R. R. 1, Springfield, O.		150	Berry plants	2
Leffel, A. D., R. R. 1, Springfield, O.		149	Berry plants	4
Lehman, S. J., & Co., R. R. 2, Osborn, O.	Enon Fruit Farm Nursery	148	Berry plants	5
Leonard, A. M., Piqua, O.	Zinnia Ridge Nursery	493	Ornamental trees, shrubs and fruit	1
Leonard, C. T., & Son, Andover, O.		151	Berry plants	3
Lewis, John E., Washingtonville, O.		152	Berry plants	2
Likens, E. R., Howell, O.		321	Berry plants	4
Linn, A. J., R. R. 3, Quaker City, O.	Quaker City Nursery	356	Fruit trees	2
Livingston Seed Co., Columbus, O.		563	General nursery stock	8
Long, Frederick, Ontario, O.		154	Berry plants	1
Long, O. N., Augusta, O.	Augusta Nursery	521	Fruit trees	1
Longanecker, E. J., Columbiana, O.		155	Berry plants	2
Lotshaw, W. D., R. R. 1, Barnesville, O.		156	Berry plants	3
Love, T. F., Calla, O.		157	Berry plants	2
Lower, Isaiah, R. R. 33, Barberton, O.		485	Berry plants	2
Lowery, J. P., R. R. 3, Quaker City, O.		158	Fruit trees	6
Lowery, Wm., Langsville, O.		424	Berry plants	6
Lupton, B. C., Mt. Pleasant, O.		515	Berry plants and fruit trees	1
Luttrell, C. P., Octa, O.		308	Fruit trees	¼
Lynd, E. T., R. R. 1, Sheridan, O.		520	Berry plants	2
Lynd, James P., R. R. 1, Sheridan, O.		325	Berry plants	8
Lynd, James H., R. R., Sheridan, O.		159	Berry plants	1½
Lynd, W. L., North Kenova, O.		328	Berry plants	4
Lynn, E. E., Salesville, O.	Salesville Nursery	504	General nursery stock	8
Mack, A. A., North Kingsville, O.		566	Ornamental shrubs	½
Marshall, S. M. & Son, Kensington, O.		166	Berry plants	10
Marshall, Sylvester, & Sons, R. R., Athens, O.		554	Berry plants	6

Martin, Alex., Ravenna, O.	Walnut Hill Farm	300	Berry plants	12
Martin, H. M., Owenstein, O.		392	Berry plants	3
Martin, H. W., & F. L. Simonton, R. R. 3, Ashland, O.		535	Berry plants	1½
Martin, J. C., Cherryville, O.		167	Berry plants	8
Martin, W K., Horatio, O.	Climax Nursery and Berry Farm	540	General nursery stock	7
Matthews, E. C., R. R. 2, Rome, O.		168	Berry plants	2
McBride, G. W., Box 526, Barnesville, O.		503	Berry plants and fruit trees	1
McCue, J. H., Mt. Pleasant, O.		347	Berry plants and fruit trees	5
McFarland, Earl, R. R. 1, Springfield, O.		160	Berry plants	2½
McFarland, W. J., R. R. 4, New Carlisle, O.		161	Berry plants	1
McGlade, Hebron, O.		564	Berry plants	¼
McGlinchey, James, R. R. 2, Salem, O.		412	Berry plants	1
McGregor Bros. Co., Springfield, O.		576	Ornamentals	2
McJilton, J. F., & Son, Forgy, O.		162	Berry plants	5
McLane, H. R., R. R. 1, Barnesville, O.		163	Berry plants	3
McNary & Gaines, Xenia, O.	Xenia Star Nurseries	371 *7	General nursery stock	100
McNary, T. W., R. R. 10, Cambridge, O.		164	Fruit trees	2
McNeil, Fred, R. R. 9, Sidney, O.		165	Berry plants	?
McVitty, James, Perry, O.	Ridge View Nursery	489	Fruit trees	60
Mellen, Edw. F., R. R. 2, Mentor, O.		537	Ornamental trees and shrubs	13½
Mellinger, S. C., Calla, O.		169	Berry plants	½
Mentzer, H. E., North Lima, O.		170	Berry plants	1
Mercer, C. W., R. R. 1, Elkton, O.		171	Berry plants	9
Merriman, B. F., Painesville, O.	Merriman's Nursery	532	General nursery stock	20
Merriman & Sweet, Perry, O.		172	General nursery stock	4
Metzger, G. W., Stoutsville, O.		408	Berry plants	5
Meyers, Frank, Geneva, O.		173	Berry plants	3
Miami Valley Nurseries (Peter Bohlender, Successor), Phoneton, O.		435	Fruit trees	25
Midkiff Nursery Co., The, E. D. Midkiff, Manager, Hemlock, Grove, O.	Midkiff Nurseries	306	General nursery stock	10
Miller, B. F., Baltimore, O.		174	Berry plants	1
Miller, H. D., Calla, O.		175	Berry plants	½
Miller, I. E., R. R. 1, Bidwell, O.		358	Berry plants	1
Miller, John F., White Oak, O.	White Oak Nurseries	538	Fruit trees and grape vines	1
Miller, T. O., Frankfort, O.		311	Berry plants	50
Miller, S. A., R. R. 1, Clayton, O.		176	Berry plants	1½

*Fumigation Certificate.

LIST OF OHIO NURSERYMEN—Continued.

Name and Address of Owner.	Name of Nursery.	Cert. No.	Kind of Stock.	Acres of Stock.
Mitchell, W. T., & Son, Beverly, O	Beverly Nursery	177	General nursery stock	20
Molden, John, R. R. 4, Barnesville, O		345	Berry plants and fruit trees	4
Mooney, E. K., Madeira, O	Madeira Nurseries	492	Ornamental trees and shrubs	1
Moore, Alex., Box 123, Barnesville, O		343	Fruit trees and berry plants	2
Moore & Wilgus, Xenia, O		179	Berry plants	5
Moore, James A., R. R. 1, Cheshire, O	Moore Nursery	360	Berry plants	2
Moore, S. R., Zanesville, O		178	Evergreens, currants and grapes	6
Morehart, J. L., R.R. 2, Canal Winchester, O		353	Berry plants and fruit trees	7
Morlan, M. B., New Waterford, O		180	Berry plants	4
Morris & Westfall, Point Rock, O	Point Rock Nurseries	181	General nursery stock	3
Morrison, J., Cadiz, O		348	General nursery stock	2
Morse, E. V., Burton, O		182	Fruit trees and berry plants	1
Motter, Fred, Tippecanoe City, O		499	Fruit and shade trees	3
Mox, Albert, R. R. 4, Delphos, O	Delphos Nursery	183	General nursery stock	4
Muchmore, W. O., Fremont, O	Glenn Hill Nursery	457	Grapes, currants and shrubs	1
Mullen, G. H., Andover, O		184	Berry plants	1½
Mullen, Scott, North Kenova, O		319	Berry plants	1
Murphy, Frank, Donnelsville, O		185	Berry plants	5
Musselman, W. L., New Carlisle, O	Railroad View Nursery	186	Berry plants	14
Myers, A. F., & Son, Augusta, O		187	Berry plants	2½
Neal, Marion, Rock Camp, O		478	Berry plants	7
Neal, John W., Essex, O		389	Berry plants	4
Neer, J. A., R. R., Huntsville, O		567	Berry plants	2
Neff, O. H., & Son, Osborn, O		188	Berry plants	5
Nelson, Frank & Fred, R. R. 1, Dexter, O		357	Berry plants	2¼
Nicholson, C. F., Jackson, O		526	Berry plants	3
Nicodemus, J. W., New Comerstown, O		189	Berry plants	5
Niemann, C. G., Port Clinton, O		382	Fruit trees	1
Noland, G. T., Wakatomika, O		351	General nursery stock	3
Noland, J. P., Peninsula, O		502	General nursery stock	16
Noland, W. A., West Carlisle, O		352	General nursery stock	4
Norman & Hacker, Painesville, O		448	Shrubs	5
Norris, J. A. & Co., Troy, O		191	Ornamentals	¼
Notestein, J. B., Creston, O	Willow Dale Nursery	192	General nursery stock	2

Oberst, R., R. R. 1, Helena, O		193	Berry plants	½
Ogden, Noah, R. R. 1, Dexter, O		194	Berry plants	4
Ohio Nursery & Supply Co., W. P. Bates, Elyria, O		507	Ornamentals	42
Osbourne, W. R., R. R. 1, Baltimore, O		195	Berry plants	3
Otlip, G. W., R. R. 4, Salem, O		196	Berry plants	2
Outland, C. C., Zanesfield, O	Marmon Valley Fruit Farm	386	Berry plants	7
Overholser, Jerry, R. R. 7, Xenia, O		443	Berry plants	2
Oyler, M., R. R. 1, Lithopolis, O		197	Berry plants	10
Parker, T. E., Barnesville, O		568	Fruit trees and berry plants	4
Parmele, H. L., R. R. 1, North Jackson, O		198	Berry plants	½
Parry, F. R. & Son, Sarahsville, O		199	General nursery stock	6
Patterson, Lavern C., R. R. 6, Mansfield, O		376	Berry plants	1
Pearson, Geo., R. R. 3, Troy, O	Maple Grove Nursery	201	Fruit and shade trees	1
Peck, John, R. R. 2, Perry, O		486	Berry plants	2
Peirce, Walter C., R. R. 3, Troy, O		202	Berry plants	4
Perennial Garden Co., Toledo, O		203	General nursery stock	¼
Peters, Geo., Co., Troy, O	Fairmount Nurseries	369 *8	General nursery stock	400
Peters, W. J., & Co., Troy, O	Ridge Avenue Nursery	370	Ornamental trees and shrubs	15
Pickett, A. R., Clyde, O		459	General nursery stock	15
Pickett, G. S., Clyde, O	Clyde Nurseries	458	General nursery stock	21
Pierce, L. B., & Son, R. R. 18, Tallmadge, O		200	Berry plants	4
Pittinger, Geo,. Clyde, O		204	Berry plants	1
Platner, D. W., Plimpton, O		377	Berry plants	3
Plettner, Henry, St. Mary's, O	St. Mary's Nurseries	569 *10	General nursery stock	2
Plummer, D. P., R. R. 2, Bellefontaine, O		388	Fruit and shade trees and berry plants	12
Plummer, Geo. W., R.R. 4, New Carlisle, O		205	Berry plants	2
Poling, John, R. R. 3, Bremen, O		206	Berry plants	1
Poe, G. H., Kenton, O		552	Grape vines	1
Post & Cummings, Painesville, O	Nickleplate Nursery	418	General nursery stock	6
Postlethwait, Selby, Barnesville, O		346	Berry plants	8
Poulton, Henry, Barnesville, O		207	Berry plants	1
Quirk, B. F. Geneva, O		208	Berry plants	2½
Raby, Ralph H., Millersburg, O		209	Berry plants	4
Raby, Wm., & Son, Millersburg, O		210	Berry plants	9
Rasor, Geo. P., Wadsworth, O		307	Berry plants	5
Rathbun, Newton, & W. B. Huss, R. R. 4, Clyde, O		314	Berry plants	4

*Fumigation Certificate.

LIST OF OHIO NURSERYMEN—Continued.

Name and Address of Owner.	Name of Nursery.	Cert. No.	Kind of Stock.	Acres of Stock.
Rathbun, J. F., R. R. 2, Clyde, O		212	Berry plants	2
Rathbun, Bert, Clyde, O		211	Berry plants	2½
Ray, F. L., Claridon, O		213	Berry plants	2
Reeves, E. A., Fairmont, O	Lake View Nursery	397	General nursery stock	10
Reinoehl Bros., Crone, O		215	Fruit trees	1
Reischman, Jacob, R. R. 1, Barnesville, O		214	Berry plants	7
Replogle, Jacob, Troy, O		216	Fruit trees	3
Resler, M. O., No. 833 W. High St., Lima, O		477 *2	Berry plants	6
Rice, Dr. James M., R. R. 7, Fremont, O	Riverside Fruit Farm	217	Berry plants	2½
Rife, Val., R. R. 1, Dexter, O		218	Berry plants	4
Riffle & Deeds, Ansonia, O	Ansonia Nurseries	557	Fruit and shade trees and berry plants	6
Riley, J. N., Washington, C. H., O	Fayette Nursery	309	General nursery stock	12
Riley, W. S., New Carlisle, O		219	Berry plants	1½
Robinson, R. N., R. R. 10, Sidney, O		220	Berry plants	10
Rocky River Nursery, Chas. Fries, Prop., Lakewood, O		367	General nursery stock	13
Rogers, Geo. W., Sybene, O		456	Berry plants	4
Rogers, H. C., Mechanicsburg, O		221	Catalpa	20
Rogers, L. S., R. R. 5, Bowling Green, O	Silver Fruit Farm	391	Berry plants	2½
Rogers, Marshall H., Jamestown, O	White Oak Fruit Farm	222	Berry plants	8
Romine, Melzer & John Graham, Langsville, Ohio		223	Berry plants	1
Rose, John, Clyde, O		224	Berry plants	2
Rose, Lucius, No. 418 Vine St., Akron, O		421	General nursery stock	7
Rothfus, Bros., R. R. 1, Lithopolis, O		225	Berry plants	2
Roush, Eph., R. R. 8, Lima, O		226	General nursery stock	9
Rueb, A., & Son, Chillicothe, O		310	General nursery stock	5
Rumfield, Henry, Langsville, O		423	Berry plants	1
Rupp, W. H., Independence, O		398	General nursery stock	3
Ryan, Mrs. J. J., Ironton, O		326	Berry plants	12
Sage, Jay W., Chardon, O		399	Berry plants	1
Sanders, J. M., Hillsboro, O	Highland County Nursery	304	General nursery stock	2
Sauttes, John F., Waynesburg, O		227	Berry plants	1

*Fumigation Certificate.

Sawyer, Frank, Norwalk, O.	Norwalk Nursery	228	Fruit and ornamental trees and shrubs	5
Scarff, W. N., New Carlisle, O.		229	General nursery stock	200
Scheidegger, Bros., R. R. 1, Baltimore, O.		230	Berry plants	6
Scheidegger, H. W., Cortland, O.		231	Berry plants and currants	10
Sear, James, Coshocton, O.		232	General nursery stock	3
Seifert, E. W., Bremen, O.		233	Berry plants	2
Selby, A. D., Ohio Experiment Station, Wooster, O.		487	Fruit trees	½
Shaeffer, Geo. E., Pleasantville, O.		234	Berry plants	½
Shafer, Chas. M., R. R. 1, Rogers, O.		235	Berry plants	2
Shaner, W. R., Cutler, O.	Plymouth Nursery	411	General nursery stock	5
Shaffer, Bros., Cridersville, O.	Shawnee Nursery	237	Fruit and shade trees	1½
Shafford, Ward, Tippecanoe City, O.		238	Berry plants	4
Shaw, John, Augusta, O.		236	Berry plants	6
Sheff, W. A., Proctorville, O.		405	Berry plants	3
Shook, I. C., Perry, O.		462	Fruit trees	1
Seidenstricker, Albert, & Sons, Langsville, O.		361	Berry plants	2
Siebenthaler, John, R. R. 1, Dayton, O.	Siebenthaler Nursery	561	General nursery stock	10
Simanton, J. A., R. R. 3, Ashland, O.		239	Berry plants	1½
Simpkins, H. S., & Son, R. R. 2, West Williamsfield, O.		240	General nursery stock	5
Slack, S. A., Lyons, O.		241	Berry plants	2
Slanker, W. T., Brandt, O.		242	General nursery stock	30
Slaughter, Jacob, Osborn, O.		243	Berry plants	6
Smith, A. C., Bayard, O.		244	Berry plants	2
Smith, Daniel, R. R. 1, Cheshire, O.		245	Berry plants	5
Smith, Henry, R. R. 5, St. Paris, O.		437	Berry plants	5
Smith & Stillions, Salesville, O.		246	Berry plants	3
Snell, W. A., Howell, O.		322	Berry plants	4
Souders, W. S., Rogers, O.	Highland Fruit Farm	247	Berry plants	15
South, John, Creston, O.	Creston, Nursery	473	Berry plants and fruit trees	1
Spangler, L. M., R. R. 4, Morenci, Mich.		383	Berry plants	1½
Speck, D. S., Nashville, O.		378	Berry plants	1
Sprinkle, Earl E., R. R. 4, Jefferson, O.		248	Berry plants	2½
Stackhouse, B. F., Lisbon, O.	Mt. Pleasant Small Fruit Farm.	335	Berry plants	18
Stackhouse, Jesse, Kensington, O.		555	Berry plants	10
Stackhouse, S.W., & Son, North Georgetown, Ohio.		249	Berry plants	5
Staup, J. W., Phoneton, O.		250	Berry plants and fruit trees	6

LIST OF OHIO NURSERYMEN—Continued.

Name and Address of Owner.	Name of Nursery.	Cert. No.	Kind of Stock.	Acres of Stock.
Steed, C. L., R. R. 1, Ironton, O		251	Berry plants	1
Stein, S. F., R. R. 2, Zanesfield, O		253	Fruit and shade trees and shrubs	3
Stephens, A. P., Perry, O	Long View Nursery	525	General nursery stock	18
Stillman, Frank A., Andover, O		252	Berry plants	4
Stockman, E. G., Prospect, O		536	Fruit and shade trees	½
Stoner, Philo, Pulaski, O		254	Berry plants and currants	2
Stormes, H. G., Andis, O		255	Fruit trees	1
Storrs & Harrison, Painesville, O	Painesville Nurseries	372 *1	General nursery stock	650
Strausburg, J. R., New Carlisle, O		256	Berry plants	1
Strawther, James, Urbana, O		257	Berry plants	5
Strohn, C. F., Hanoverton, O		258	Berry plants	3
Sutton, John H., R. R. 1, Sheridan, O		259	Fruit trees	1
Swabley, Gustus, R. R. 7, Tiffin, O		513	Berry plants	12
Swick, W. C., R. R. 3, Bremen, O		514	Berry plants	1½
Taggart, W. I., New Carlisle, O		260	Berry plants	2
Taggart, J. W., Donnelsville, O		262	Berry plants	2
Tarbet, W. F., Bayard, O		261	Berry plants	2½
Templin Co., The, M. B. Templin, President, Calla, O		333	General nursery stock	2
Thomas, W. W., R. R. 3, Ashland, O		474	Berry plants	¾
Thomas, Wm., R. R. 2, Newton Falls, O		393	Berry plants	1
Thompson, J. E., Ryansville, O		327	Berry plants	4
Thrash, Levi, & Sons, Carroll, O	Crystal Spring Farm	264	Berry plants	16
Toland, T. C., Calcutta, O		265	Berry plants	12
Toledo Nursery & Spraying Co., W. H. Steffens, Manager, No. 980 W. Delaware Ave., Toledo, O		560	Ornamental trees and shrubs	½
Trainer, Darius, R. R. 1, Zaleski, O	Lone Star Nursery	454	Fruit trees	4
Turner, O. P., R. R. 2, Orwell, O		266	Berry plants	2
Tuttle, Gerald, R. R. 3, Painesville, O		396	Ornamental shrubs	5
Uhrig, Peter, Jr., New Carlisle, O		267	General nursery stock	8
Ullrich, Lewis, Tiffin, O	Ullrich Greenhouse	381	Ornamental shrubs	⅛
Underwood, J. C., R. R. 1 Jefferson, O		268	Berry plants	1

*Fumigation Certificate.

Union, W. L., R. R. 1, Barnesville, O.		344	General nursery stock	4
Vandervort, J. N., & Son, Wilmington, O.	New Antioch Nursery	429	Fruit and shade trees and shrubs	1
Van Driest, P. M., Box 138, E. Cleveland, O.	Euclid Avenue Nursery	417	General nursery stock	10
Van Horn, Mrs. Emma, R. R. 4, Canton, O.		542	Shade trees	½
Victor, Elizabeth, Nashport, O.		269	Fruit trees	1
Viers, M. F., Tallmadge, O.		270	Berry plants	5
Vowles, Geo. W., R. R. 16, Everett, O.		271	Berry plants	½
Wagner, B. P., Sidney, O.	Wagner Park Conservatories	438	Ornamental trees and shrubs	25
Wagner, Wm., R. R. 4, New Carlisle, O.		272	Berry plants	1
Walker, S. F., Georgetown, O.	Georgetown Nurseries	305	Fruit trees	2
Walker, Wm., Bayard, O.		340	Berry plants	1
Walters, Amos N., Leetonia, O.		273	Berry plants	2
Wead, Joseph S., Xenia, O.		451	Berry plants	4
Webb, J. H., Essex, O.		472	Berry plants and fruit trees	4
Webster, S. R., R. R. 1, Rock Creek, O.	Rose Cottage Nursery	274	Ornamental shrubs	½
Webster, Walter A., Quaker City, O.		275	Berry plants	6
Welch, Mark, R. R. 1, Painesville, O.		460	General nursery stock	18
Welch, T. O., Essex, O.		317	Berry plants	2
Wellman, Geo., New Knoxville, O.		384	Fruit and shade trees and berry plants	2
Welsh, Geo. T., New Waterford, O.		276	Berry plants	3
Weltz's Sons, Leo, Wilmington, O.	Wilmington Nursery	303	General nursery stock	35
Werne, Jacob, R. R. 24, S. Akron, O.		299	Berry plants	1
West, Geo. F., Perry, O.		533	Berry plants	3½
West, T. B., Perry, O.	Maplebend Nursery	496	General nursery stock	50
Westover, L. L., Elkton, O.		337	Berry plants	5
Wetzel, Bros., Painesville, O.		419	Ornamental trees and shrubs	3
Whipple, I. O., Madison, O.		277	Berry plants	3
Whitacre, Thomas L., E. Rochester, O.		415	Berry plants and evergreens	10
Whiteleather, Walter S., R. R. 2, Box 71, Moultrie, O.		341	Berry plants	2
Whitney, C. L., No. 116 Belmont St., Warren, O.	Evergreen Nursery	278	Fruit trees, evergreens and shrubs	5
Wilcox, Wilber, R. R. 2, Cheshire, O.		279	Berry plants	4
Williams, B. F., Rock Camp, O.		506	Berry plants	4
Williams, E. C., Zanesfield, O.		387	General nursery stock	4
Williamson, Alfred B., R. R. 5, Salem, O.		280	Berry plants	½
Willis, Elmer, Elkton, O.		285	Berry plants	2
Willis, E. L., Manker, O.		282	Berry plants	3
Willis, T. C., Bayard, O.		281	Berry plants	3
Willis, J. G., Andis, O.		283	Berry plants	4

LIST OF OHIO NURSERYMEN—Concluded.

Name and Address of Owner.	Name of Nursery.	Cert. No.	Kind of Stock.	Acres of Stock.
Willison, E. C., Baltimore, O.		284	Berry plants	2
Wilson, F. D., Geneva, O.		543	Berry plants	1½
Wilson, Guy C., R. R. 1, Barnesville, O		286	Berry plants	5
Winchell, A. J., Liverpool, O.		287	Berry plants	?
Winder, W. C., Lisbon, O.		288	Berry plants	¼
Windle, F. P., Columbiana, O.		289	Berry plants	2
Winslow & McDonald, Tiverton, O.	Tiverton Nursery	350	Fruit trees	10
Wolcott, N. B., Copley, O		290	Berry plants	5
Wolford, Simon L., R. R., Salem, O		291	Berry plants	1
Wood, E., Weston, O		476	Shade trees	½
Wood, W. C., Dearing, O.		531	Berry plants	4
Wood, W. H., Essex, O		316	Berry plants	3
Wooster Nursery Co., The, T. E. Ewing, Manager, Wooster, O		547	General nursery stock	5
Worman, Frank T., & Co., Troy, O		190	Fruit and shade trees and berries	3
Wright, John T., R. R. 1, Vinton, O		292	Berry plants	3½
Wyss, Daniel, New Philadelphia, O	New Philadelphia Nursery	293	General nursery stock	5
Yetter, Chas., Clyde, O.		294	Berry plants	1
Yoder, J. M., Urbana, O.		295	Berry plants	1
Young, Edward, R. R. 1, New Waterford, O		296	Berry plants	3
Ziegenfelder, J. B., Troy, O.		297	Berry plants	3
Zinck, Christopher, Brandt, O.		298	Berry plants	½

AGENTS FOR NURSERY STOCK IN OHIO.

In this list are given the names of nurseries, followed by the names of the agents who have filed sworn statements since July 1, 1907, in accordance with the Nursery and Orchard Inspection Law of the State. These statements are void after the date when the nurseryman's certificate expires.

The Bremen Nursery Company, Bremen, Ind.
I. J. McCormic.

Capital City Nursery & Orchard Company, Indianapolis, Ind.
C. A. Clark,
B. F. McCarty,
J. N. McCarty,
Arthur Moore,
J. H. Rodden.

The R. G. Chase Company, Geneva, N. Y.
J. P. Saunders,
Frank L. Traphagen.

John Day, Fremont, Ohio.
J. H. Bastard.

Emmons & Company, Newark, N. Y.
Thomas C. Burgham,
James Wallace Collins,
L. A. Chatelain,
J. C. Dumbauld,
James Helmick,
A. B. Huff,
A. T. Kerns,
W. W. Putt,
John Rutter.

Fairmont Nursery Company, Troy, Ohio.
G. W. Chiles.

The French Nursery Company, A. B. French, Proprietor.
Arthur M. Clark,
E. L. Johnson,
James S. Johnson,
L. C. Kinley,
A. Kreager.

The Greening Brothers Nursery Company, Monroe, Mich.
Alva Ames,
Henry Flater & Son,
J. A. Raby.

Henby & Son, Greenfield, Ind.
Michael L. McCabe,
Al. A. White.

The I. E. Ilgenfritz Sons Company, Monroe, Mich.
John F. Baer,
Calvin E. Hanna,
Wm. Law,
Joseph McCurdy,
Ferdinand Schnidt,
Barney P. Shepler,
Isaac Thompson.

T. W. Jenney, Oberlin, Ohio.
W. C. Clancy.

Kalamazoo Nurseries, Kalamazoo, Mich.
James Adams,
C. C. Paddison,
J. A. Patterson,
W. W. Putt,
Geo. Robinson,
D. Smittle,
I. K. Zerbe.

The Storrs & Harrison Company, Painesville, Ohio.
John Bettscher,
W. P. Sharp.

C. W. Stuart, Newark, N. Y.
S. W. Bone,
David Cornthwait,
Sylvester Darby,
J. M. Dean,
Martin H. Diemer,
Irwin Mackey,
Martin V. McKim,
C. G. Tucker,
Theodore Wilson.

Knight & Bostwick, Newark, N. Y.
Gust. Crow,
Ira R. Fuller,
T. H. Hemphill,
James D. Kenney,
E. B. Manahan.
Peter McKevitt,

R. D. Lintchford, Rochester, N. Y.
W. P. Hempfield.

The Michigan Nursery Company, Monroe, Mich.
Earl N. Brining,
J. J. Ross.
Chas. S. Younce.

W. T. Mitchell & Son, Beverly, Ohio.
A. L. Calahan,
C. C. Graham.

Wm. C. Moore & Company, Newark, N. Y.
S. W. Gander,
Wm. Holley,
I. E. Hoffer,
Martin P. S. Koch,
Robert Keeling,
Prof. A. B. Morris,
Eli McPherson.
J. W. Rapp,
W. S. Richard,
Elmer Thomas.
Herman Spillman,
C. R. Ward.

Pan-American Nursery, Rochester, N. Y.
Frank J. Cane.

J. W. Peters, Proprietor, Troy, Ohio (Ridge Avenue Nurseries).
C. L. Hurst.

G. S. Pickett, Clyde, Ohio.
P. N. Barnes,
A. M. Findley,
Fowler Grummon,
E. B. Morse,
Joseph Strausbaugh.

Portland Nursery Company, Portland, Ind.
Henry H. Hush,
Elmer Thompson.

W. N. Scarff, New Carlisle, Ohio.
C. W. Schmidt.

Stark Brothers Nursery and Orchard Company, Louisiana, Mo.
Wm. H. Clements,
John C. Cornelius,
J. R. Houser,
Walter T. Kay,
C. M. Laughman,
W. H. Ortman,
E. G. Powell,
Gusta Reel,
Clarence Relm,
G. W. Rogers,
Geo. W. Rogers,
K. Smith,
A. Watson,
John Wilkinson.

C. L. Van Inwagen, Newark, N. Y.
J. N. Davids,
A. A. Lucas.
A. R. Mumford,

The Western N. Y. Nursery Company, Rochester, N. Y.
George Andus,
T. T. Collins,
James L. Davis,
Rev. J. L. Davis,
R. E. Hopkins,
Chas. Shreoder.

DEALERS IN NURSERY STOCK IN OHIO.

The following list gives the names and addresses of dealers in nursery stock who have filed sworn statements since July 1, 1907, as is required by law; also the names of the nurseries from which the stock was obtained. Statements void after June 1, 1908

John Aller, Richwood, Ohio.
Stock from Wm. C. Moore & Co., Newark, N. Y.

Henry J. Biehl, 909 Hancock Street, Sandusky, Ohio.
Stock from the Euclid Avenue Nursery, Painesville, Ohio; The Rakeshaw & Pile Company, Kenreth Square, Pa.

Bennett E. Blakeslee, 1600 Denison Avenue, Cleveland, Ohio.
Stock from The Cassell Nursery Company, Lakewood, via Cleveland, Ohio.

William A. Bets, 1869 E. 55th Street, Cleveland, Ohio.
Stock from Storrs & Harrison, Painesville, Ohio.

P. N. Barnes, Troy, Ohio.
Stock from G. S. Pickett, Clyde, Ohio.

Charles W. Berry, Addison, Ohio.
Stock from C. W. Stuart, Newark, N. Y.

Irvin C. Darling, 1414 E. 88th Street, Cleveland, Ohio.
Stock from L. Green & Sons Co., Perry, Ohio.

J. Frink, 2711 Church Street, Cleveland, Ohio.
Stock from L. Green & Sons Co., Perry, Ohio.

William Ferris, Norwood, Ohio.
Stock from Fred Kolthoff, Norwood, Ohio.

C. C. Graham, Cochoston, Ohio.
Stock from W. T. Mitchell & Son. Beverly, Ohio; C. M. Hobbs & Sons, Bridgeport, Indiana.

C. L. Hurst, Chillicothe, Ohio.
Stock from Ridge Avenue Nursery, Troy, Ohio.

M. O. Harmon & Son, Prospect, Ohio.
Stock from McNary & Gaines, Xenia, Ohio; Storrs & Harrison, Painesville, Ohio; W. G. Reed, Vincennes, Ind.

I. W. Hoag, Berlinville, Ohio.
Stock from Storrs & Harrison, Painesville, Ohio; H. J. Champion, Perry, O.

T. W. Jenney, Oberlin, Ohio.
Stock from L. Green & Sons Co., Perry, Ohio; Storrs & Harrison Company, Painesville, Ohio; H. Kohankie & Son, Painesville, Ohio.

L. C. Kinley, Upper Sandusky, Ohio.
Stock from A. B. French, Clyde, Ohio.

Fred Kolthoff, 1918 Cleaneay Avenue, Norwood Ohio.
Stock from The Donaldson Company, Warsaw, Kentucky.

Albert Knopp, Pugh and Fair Avenues, Columbus, Ohio.
Stock from Storrs & Harrison Company, Painesville, Ohio; Elizabeth Nursery Company, Elizabeth, N. J.

Frank J. Cane, Cortland, Ohio.
Stock from The Pan-American Nurseries. Rochester, N. Y.

M. B. Mershon, 256 S. Balch Street, Akron, Ohio.
Stock from Storrs & Harrison, Painesville, Ohio.

Michael L. McCabe, Greenfield, Ind.
Stock from J. K. Henby & Son. Greenfield, Ind.

Joseph McCurdy, Mt. Blanchard, Ohio.
Stock from J. E. Ilgenfritz & Sons, Monroe, Mich.

Geo. Magrie, 602 Elm Street. Cincinnati, Ohio.
Stock from Willadeen, Warsaw, Kentucky.

Mathias Otto, 215 Santee Avenue, Findlay, Ohio.
Stock from C. W. Stuart & Company, Newark, N. Y.

Frederick Perry, Findlay, Ohio.
Stock from The Fremont Nursery, Fremont, Ohio.

Louis D. Poock, Troy, Ohio.
Stock from The George Peters Nursery Company, Troy, Ohio.

Henry J. Phillips, Jr., Toledo, Ohio.
Stock from Ebbings & Van Groos, Boskoop, Holland; Perennial Garden Company, Maumee, Ohio; Lewis Roesch, Fredonia, Ohio; Evergreen Nursery Company, Sturgeon Bay, Wis.

J J. Ross, Malinta, Ohio.
Stock from The Michigan Nursery Com any, Monroe, Mich.

W. P. Sharp, 261 W. Frambes Avenue, Columbus, Ohio.
Stock from Storrs & Harrison Company, Painesville, Ohio.

Edward A. Shattuck, 167 Lane Avenue, Columbus, Ohio.
Stock from Storrs & Harrison Company, Painesville, Ohio.

C. W. Schmidt, Springfield, Ohio.
Stock from W. N. Scarff, New Carlisle, Ohio.

Joseph Strausbaugh, 374 Sandusky Street, Tiffin, Ohio.
Stock from G. S. Pickett, Clyde, Ohio.

F. E. Sears, Sabina, Ohio.
Stock from M. L. Carr's Sons, Yellow Springs, Ohio.

James Stenner, 133 W. 5th Street, Cincinnati, Ohio.
Stock from Joe. W. Schuette & Company, St. Louis, Mo.

Frank L. Traphagen, Massillon, Ohio.
Stock from Chase Brothers Company, Rochester, N. Y.

Isaac Thompson, Graham, Ohio.
Stock from I. E. Ilgenfritz's Sons Company, Monroe, Mich.

G. O. Wellman, Defiance, Ohio.
Stock from Chase Brothers Company, Rochester, N. Y.

Sixth Annual Report

OF THE

State Board of Live Stock Commissioners of Ohio

TO THE

Governor of the State of Ohio

FOR THE

Year Ending November 4, 1907.

SIXTH ANNUAL REPORT

OF THE

State Board of Live Stock Commissioners

OF OHIO.

Columbus, Ohio, November 4th, 1907.

To His Excellency, Andrew L. Harris, Governor of Ohio:

SIR:—The State Board of Live Stock Commissioners has the honor to submit herewith its annual report for the year ending November 4th, 1907. The appendix contains the rules and regulations adopted by the Board for the shipment of live stock into the state, and a list of licensed veterinarians practicing veterinary medicine in the state.

For over a year the Board has had in its employ a state veterinarian and an assistant, who have devoted their entire time to the performance of official duties.

Over two hundred and twenty-five trips and laboratory investigations were made during the year. The diseases that received principal attention were glanders and mange among horses, Southern cattle fever and tuberculosis among cattle, scab among sheep, swine plague and hog cholera among swine and rabies among all animals.

A few new or unusual diseases were reported and investigated, the chief among these being black leg or quarter ill and ulcerative ano-vulvitis among calves, and epizootic lymphangitis among horses. The latter disease may, in the future, require considerable attention from the Board.

With the funds available it was impossible during the past year to exercise anything approaching a perfect control over the spread of most of these diseases. From the beginning of its organization in 1902, it has been the policy of the Board to take up only such control work as could be well and effectively handled with the means provided. Accordingly the eradication of glanders and sheep scab and the control of Southern cattle shipments with a view to excluding Southern cattle fever, received most of the time and attention of the Board.

Owing to the comparatively limited prevalence of these diseases, together with other favoring circumstances, such as the possibility of co-operation with the National Bureau of Animal Industry in regulating the shipment of Southern cattle and Western sheep, they have been kept under satisfactory control. The general advance in the price of all kinds of live stock has been attended with larger shipments of animals for breeding and other purposes, and with this the facilities for introducing and disseminating infectious diseases among animals have been increased. That this is true is evidenced by the growing demand upon the services of the Board for the investigation of all kinds of animal diseases.

In order, therefore, to maintain the work of the Board even at its present stage of efficiency larger funds will be required, and any extension of its duties to the much needed control of tuberculosis, the infectious swine diseases and rabies, would require still additional means.

Most of the energies of the Board were devoted to the control of glanders, Southern cattle fever and sheep scab. Investigations concerning the remaining diseases were made whenever and wherever they did not conflict with the work relating to those first mentioned.

During the year thirty-two dairy herds were tested for tuberculosis as compared with sixteen herds for the preceding year. In two years nine hundred and eleven cattle were tested. Of this number two hundred and eleven, or slightly over twenty-three and one-half per cent., were found tubercular.

The fact that tuberculosis of cattle and tuberculosis or consumption of man are one and the same disease, and that they are readily intercommunicable, is no longer doubted by any one at all informed upon these subjects. The report of the Royal Commission appointed to inquire into the relations of human and bovine tuberculosis confirms this statement. Investigations conducted in our National Bureau of Animal Industry point to the same conclusions.

The control of tuberculosis in our dairies is therefore no longer a simple economic problem with which the farmer and dairyman alone have to deal, but it directly and seriously affects and concerns the public in general.

Although it would be impossible to make an accurate estimate of the number of tubercular cows that supply the citizens of Ohio with milk, the tuberculosis situation in the state may be briefly summed up as follows:

Of nine hundred and eleven cows officially tested within the last two years two hundred and eleven, or over twenty-three and one-half per cent., proved to be tubercular. Since this is the percentage of tubercular cattle in "suspected" herds that were examined at the request of owners, these figures do not necessarily represent average conditions existing in the state. At the same time it should be borne in mind that these herds were of the better classes of cattle found in the state, and that their owners were likewise among the better class of dairymen who pay more than average attention to keeping up the sanitary condition of their herds. It might be expected, therefore, that the actual average conditions are even worse than is indicated by the above figures. All of the herds tested by the Board were examined at the request of the owners with the previous understanding that all reacting (tubercular) animals would be condemned and destroyed without any definite promise on the part of the Board that the owners would ever receive one cent from the state as compensation for their loss, excepting as the laws of the state provided for such compensation.

In contrast to this class of dairymen it would be interesting to know what others do. The manufacturers of tuberculin dispose of a large quantity of their product in this state, vastly more than would be required for the official tests of the Board. All of the tuberculin used by the Board is furnished directly by the laboratories of the National Bureau of Animal Industry, consequently all of the tuberculin manufactured by the various drug firms and disposed of on the market must be used for private purposes. Now the question arises, what is done with the tubercular cattle that are discovered with the use of this additional tuberculin? If the herds tested publicly, at the state's expense, yield over twenty-three and one-half per cent. of tubercular animals, what can be expected as the percentage in herds tested privately and secretly after the owner is forced to have the test made by the positive conviction that the disease has begun to make inroads on his herd? The Board has no means which enable it to be accurately informed as to this, neither has the Board any official knowledge as to what final disposition is made of the reacting cattle. Though privately and secretly tested, it is not probable that in all instances they are privately and secretly destroyed, and their carcasses burned or buried as provided by law. It is certainly not frequently done openly. Herds of this kind are known to have been disposed of at public sales, each animal going to the highest bidder. Frequently such animals come from registered herds with wide reputation, and many of these animals are bought with the intention of introducing new blood, and improving some other herd. The consequences can be nothing but disastrous.

During the past two years, with not even a fair beginning on the work of suppressing the ravages of this disease, nearly eight thousand dollars' worth of cattle were ordered destroyed on account of tuberculosis. In every instance the disease could be traced to the introduction into the herd at some time or other of a tubercular animal that was bought, unsuspectingly, either with a view to enlarging the herd or to the introduction of new and better blood. In some instances the diseased animals were brought from other states. Unless control of some sort over the disposition of reacting cattle is instituted the time cannot be far distant when the problem of getting rid of tuberculosis in Ohio will have reached more staggering proportions than in the worst infected countries of Europe, where even now from 30 to 40 per cent. of all cattle are admitted to be tubercular.

The Board seriously urges that means be provided for the enforcement of regulations affecting the importation of tubercular cattle, and for the restriction of their movement within the state, as well as for the extermination of the disease from herds whose owners desire the cooperation of the Board of Live Stock Commissioners.

Briefly stated, such regulations would include a general quarantine against all cattle coming into the state unless they were accompanied by certificates showing that they had been tested with tuberculin by an authorized veterinarian and found to be free from tuberculosis. It should be forbidden by statute to dispose of a tubercular bull or cow, or any of the products of the latter, by sale or otherwise, within the borders of the state without written permission from the state Board of Live Stock Commissioners. Veterinarians and owners of dairy cattle should be compelled to report all cases of suspected tuberculosis to the Board of Live Stock Commissioners. Ample provision should be made for the enforcement of these regulations as well as for the encouragement of dairymen, by the distribution of literature and other methods, to procure and maintain healthy herds. Lastly, but not of least importance, provision should be made for the payment of a fair compensation to the owners of officially condemned tubercular cattle.

A law, such as exists in one form or another in all of the German states, providing for the annulling of a contract of sale if, within a specified number of days an animal is found affected with a chronic incurable disease, would be of inestimable value in the work of suppressing tuberculosis.

The establishment of milk commissions in Cleveland, Cincinnati, Columbus, Dayton, Toledo, Sandusky, Warren and other places that have for their object the encouragement of the production of pure, wholesome milk for infants and invalids, and the numerous voluntary appeals to the Board for assistance in the testing of herds with tuberculin, as well as the personal sacrifices that have been made by the owners of many herds, give ample proof that the demand for action on the part of the state in the control and suppression of tuberculosis is general and urgent.

Rabies among domestic animals is on the increase, and though its victims are comparatively few among live stock, the number of human beings that have fallen victims to infection reflects unfavorably upon the administration of live stock sanitary measures in a state. This disease can be stamped out with comparatively little effort and expense, and means should be provided for this purpose.

The contagious swine diseases, hog cholera and swine plague, continue to be prevalent. The requests received by the Board to investigate outbreaks, to aid in stamping out centers of infection, and to enforce the law in respect to the movement or shipment of infected animals to and from public stock yards have had to be almost wholly refused on account of the inability to meet the necessary expense with the funds provided. In some instances the local authorities after applying in vain for help have taken the matter of enforcing the law into their own hands. In one case a fine was imposed and several other cases are now in the courts. These methods, or attempts of local authorities, of controlling infectious diseases, though not without good results, are too sporadic in their nature to be of permanent benefit. To obtain the best results there should be systematic and harmonious action from a central point of authority.

The losses from these diseases run high into the thousands every year. But the economic side of the question, as far as the live stock interests of the state are concerned, is not to be considered alone. The right of the public to demand a wholesome food supply is of equal importance and this cannot be obtained when the unrestricted sale of exposed swine and suspicious cattle is possible.

The glanders situation in Ohio, with the exception of Montgomery county, where, through the action of the local court the activities of the Board have been temporarily suspended, is more than satisfactory. Although a large number of trips of investigation have been made, the number of actual cases of glanders found was very small. During the last two years ninety-four horses were destroyed on account of glanders. Most of these were furnished by two chief centers of infection, one at Dayton and the other at Portsmouth.

Fifty-six horses affected with glanders were destroyed in Dayton, and twenty additional animals infected with the disease were held in quarantine at the time of the action of the Dayton Court in restraining the Board and its veterinarians from conducting further mallein tests for the purpose of diagnosing glanders.

Ohio has always been fortunate in being comparatively free from glanders. In connection with this statement it is significant that for twenty years the funds provided for the use of the Board of Live Stock Commissioners, though never large, were always devoted principally to the control and extermination of this disease. Outbreaks or centers of infection of the magnitude of the one in Dayton in 1906, though common in some other states, are of rare occurrence in Ohio. The radical action of the Board with reference to the extermination of the disease in Dayton was taken after a careful study of the most approved and scientific methods for the control and eradication of the disease in the most advanced countries and states of Europe and America. Certain people of Dayton looked with horror and suspicion upon the course taken by the Board. Some of the more excitable natures feared that the action of the Board would lead to an actual horse famine. This feeling, together with the influence of inflamed newspaper articles, finally led to the unusual action of the court at a time when the situation, as far as the disease was concerned, was coming under fair control. The horses in nearly every large livery and transfer stable in Dayton, about forty in number, had been tested with mallein and all of the suspiciously reacting animals had been either destroyed or placed in safe quarantine. A few more large stables should have been tested when a general inspection of such private stables to which suspicion of possible infection might have been directed, was to be made. This would practically have cleared the city of Dayton of glanders, an accomplishment rarely attained by a sanitary board in a city of this size.

The control of glanders, the most feared of all horse diseases in temperate climates, is one of the most difficult and disagreeable problems that ever confronts a live stock sanitary board. A horse affected with this practically incurable disease may live for a long time, sometimes years, in apparently perfect health, and at the same time be the medium of distributing the germs of infection to other animals or stables. The destruction of such an animal always meets with violent opposition from the owner unless he happens to be more than ordinarily reasonable and well informed. To try to convince an ignorant man whose only means of support for himself and family is a horse in the first stages of glanders that it is best for his interests and for the interests of the community in general that his horse be sacrificed, is a task for which no live stock sanitary officer need be envied. Under certain conditions it becomes necessary to enforce seemingly arbitrary regulations that cannot be understood by the owners of animals. These are always difficult positions for live stock sanitary officers, and whatever may be necessary should be done to lighten the burden of the unfortunate horse owner and make possible the enforcement of the law. A definite promise for a fair compensation would help matters, but the best solution of the problem would be the provision of a fund out of which the confiscated animal could be paid for at once. Either this should be done, or the methods of the Board of handling the glanders problem should be changed from the radical and effective method, having in view the complete eradication of the disease, to the more popular palliative, but vastly more expensive plan of simply controlling or suppressing the disease.

Ohio is one of the few states that can afford to exterminate glanders. The limited prevalence of the disease, and the fact that this plan has always been followed with more or less system since the creation of the Board of Live Stock Commissioners, make this not only possible, but expedient.

In states like Massachusetts such a plan might be considered prohibitive. With a total number of horses less than one-fifth of that in

Ohio, Massachusetts has lost in five years, 1901-1906, three thousand six hundred horses from glanders, an average of seven hundred and twenty horses per year. During a similar period of five years, 1902-1907, Ohio suffered a loss of one hundred and eighty-six horses, or thirty-seven horses per year. The total appraised value of these animals is officially given at nineteen thousand nine hundred and ninety-three dollars ($19,993.00), or an average annual loss of nearly four thousand dollars ($3,998.60). Estimating the value of the horses lost in Massachusetts on the same basis, that state suffered in five years a loss of nearly two million dollars ($1,930,000.00) from glanders alone. The cattle bureau of that state has at its disposal an annual appropriation of more than eighty thousand dollars, yet it has given up the hope of eradicating glanders and contents itself with suppressing the disease, and keeping the annual loss of horses below the 1,000 mark.

In 1902 to 1906 inclusive, Boston alone lost over one thousand horses from this disease; Worcester, in the same period lost three hundred and twenty-four horses, Cambridge, three hundred and twenty, Somerville, two hundred and twenty, Fall River, one hundred and twenty-eight! In the year 1903, the losses in Kansas City were estimated at between six hundred and seven hundred horses. In 1904, two thousand six hundred and fifty-eight horses were killed on account of glanders in Great Britain. The annual losses to the state of New York reach several hundred horses. Minnesota, in three years, 1903 to 1906, destroyed sixteen hundred and forty horses on account of glanders. In the Dominion of Canada, in the years 1902 to 1906, inclusive, over twelve thousand cases of suspected glanders were officially reported.

It appears from this that glanders is an exceedingly destructive disease, and that the governments of many states and countries sacrifice vast sums of money on its account. On the other hand, Ohio seems to be comparatively free from the disease, and for this reason no amount of trouble and no reasonable expense should be considered too great to keep it in check or to stamp it out altogether. The latter is not only possible, but, if the system of handling outbreaks followed by the Board for the past five years is continued, it will be only a short time before this ideal condition may be realized. Glanders is being stamped out in other countries. It has never been permitted to gain a foothold in Australia, and it can be eradicated in Ohio.

The agricultural and live stock industries of Ohio are perhaps of greater importance than any other industry or combination of industries in the state. Their protection from serious losses on account of existing plant and animal diseases, or from the possible importation of new diseases which are constantly threatening our borders, is a matter that concerns not only the farmer and the stock breeder, but every citizen of the state. The presence of these diseases affect the quality and healthfulness of food products as well as their price, and in addition to this the most dangerous of these diseases, like glanders, tuberculosis, anthrax, rabies, trichinosis, tape-worm disease, etc., are fatal to man and beast alike.

The Board therefore respectfully urges that more ample provision be made for the control and eradication of animal diseases.

The most recent figures obtainable show that the live stock sanitary board of Minnesota has an annual appropriation of nineteen thousand dollars besides a special appropriation of thirty-five thousand dollars annually for the next two years. The latter will probably also become a standing appropriation. The state of Montana has an annual appropriation of eighteen thousand dollars for use of its board of live stock commissioners. New York appropriates fifty-three thousand dollars annually for this work; the state of Texas has thirteen thousand dollars; Misouri, nineteen thousand dollars; Oklahoma, twelve thousand dollars (this sum has been found insufficient and larger appropriations will be asked for in 1908); Colorado and New Mexico devote a certain portion of the entire tax of the state to the protection of their live stock industries; Kansas appropriates ten thousand dollars annually; the Board of Live Stock Commissioners of Illinois has an available fund for the year 1907, of fifty-five thousand eight hundred and twenty-four dollars; the Live Stock Sanitary Board of Pennsylvania, fifty-seven thousand five hundred dollars; that of New York, fifty-three thousand dollars; the Cattle Bureau of Massachusetts, eighty-one thousand six hundred and five dollars, and the Cattle Commission of Vermont may draw upon the state treasury for any sum that it may need.

The following table shows more graphically the position occupied by Ohio in this respect, as compared with some other states:

State.	Annual Appropriation for Live Stock Sanitary Work.	Value of Live Stock According to Statistical Abstract of the U. S. for 1906.
Ohio	$5,000	$125,954,616
Tennessee	5,000	60,818,605
North Carolina	6,000	30,106,173
North Dakota	*7,500	42,430,491
Kansas	10,000	190,956,936
Missouri	11,000	160,550,004
Oklahoma	13,000	54,829,568
Texas	13,000	240,576,955
Wyoming	14,000	39,145.877
Montana	18.000	9,170,554
Rhode Island	20,000	2,593,659
New Mexico	34,957	31,727,400
New York	53,000	125,583,715
Minnesota	54,000	31,004,000
Illinois	55,824	193,758,037
Pennsylvania	57,500	102,439,183
Massachusetts	81,605	15,798,464
Vermont	†Unlimited	17,841,317

*In addition to this, unlimited funds for indemnities.

†$48,346.99 for biennial term ending June, 1904.

The value of the live stock in the largest and richest of these states, with the exception of Texas, where conditions cannot be compared with those existing in Ohio, is not very much more than that in our own state, yet the annual appropriation for the protection and promotion of our live stock industry for the last two years, was only five thousand dollars. This sum is inadequate for the purpose. The suppression of tuberculosis, swine plague and hog cholera, the extermination of rabies, glanders and sheep scab, and the exclusion of cattle mange and sarcoptic mange of horses, which may yet be possible although both diseases are beginning to make rapid inroads into the state, cannot be accomplished without more liberal appropriations.

The lack of means for the enforcement of effective measures against the importation of Western branded horses has in a great measure been responsible for the repeated outbreaks of glanders in the state. In two years the state has lost, through official condemnation, thirteen thousand dollars' worth of horses. Under the laws of the state the owners of these animals may claim compensation for their losses. Uncontrolled, the conditions will get worse every year; on the other hand, a few thousand dollars annually wisely expended in regulating the shipments of Western horses into the state, together with careful vigilance observed within our borders, will ultimately lead to the extermination of the disease.

The Board therefore respectfully requests that more ample provision for the conduct of its duties be made for the ensuing year.

During the past two years ninety-four horses, appraised at thirteen thousand and twenty-one dollars ($13,021.00), were destroyed on account of glanders; one hundred and seventy-three dairy cattle, appraised at seven thousand seven hundred and sixty-four dollars and twenty-five cents ($7,764,25), were condemned and destroyed on account of tuberculosis, and nine head of swine, appraised at forty-five dollars ($45.00), were ordered destroyed on account of exposure to rabies. The Board respectfully recommends that the owners of the destroyed horses and swine be compensated as provided by law, and that the owners of the condemned cattle receive one-half of the appraised value of the same as compensation for their losses.

Following is an itemized list of all animals destroyed by order of the Board. The list includes the names and addresses of the owners and the appraised value of the animals:

LIST OF GLANDERED HORSES DESTROYED.

No.	Color and Sex.	Name and Residence of Owner.	Appraised Value.
1	Roan Gelding	Wm. Green, New Lexington	$95 00
2	Bay Gelding	Wm. Green, New Lexington	80 00
3	Sorrel Mare	Wm. Green, New Lexington	80 00
4	Bay Gelding	Wm. Green. New Lexington	75 00
5	Sorrel Mare	Wm. Green, New Lexington	10 00
6	Gray Mule	Wm. Morgan, Portsmouth (not appraised)	
7	Bay Mare	Freshour Bros., Porstmouth	100 00
8	Bay Mare	Foster Sherrick, Wilmington	50 00
9	Black Gelding	F. C. Rice, Piqua	145 00
10	Gray Gelding	Chester Langel, Basil (not appraised)	
11	Bay Gelding	A. C. Carpenter, Basil	150 00
12	Bay Gelding	A. C. Carpenter, Basil	175 00
13	Dun Gelding	Williams and Miller, Portsmouth	60 00
14	Sorrel Gelding	J. I. Marsh, Portsmouth	60 00
15	Bay Mare	Sampson D. Eckhart, Portsmouth	165 00
16	Gray Gelding	Aaron Rife, Gallipolis	75 00
17	Bay Colt	Frank Seymour, Portsmouth	40 00
18	Bay Mare	A. F. Scott, Youngstown	100 00
19	Bay Colt	A. F. Scott, Youngstown	110 00
20	Bay Mare	O. W. Patterson, Weston	142 00
21	Bay Gelding	Dan Warner, Montpelier	77 50
22	Bay Gelding	Louis Burk, Portsmouth	130 00
23	Brown Mare	Scott Cessna, Locust Grove	70 00
24	Gray Gelding	Emmet C. Curtis, Cardington	75 00
25	Sorrel Mare	O. W. Chapman, Weston	156 50
26	Sorrel Gelding	Nelson Sanders, Oakley (Cincinnati)	150 00
27	Bay Mare	J. M. Adamson, Dayton	125 00
28	Bay Mare	P. A. Tolley, Dayton (acute glanders)	175 00
29	Black Mare	City Livery Stable, Dayton	140 00
30	Gray Gelding	City Livery Stable, Dayton	75 00
31	Gray Gelding	City Livery Stable, Dayton	60 00
32	Bay Gelding	Boston Scale Co., Dayton	85 00
33	Gray Mare	Geo. A. Slaght, Dayton	100 00
34	Bay Mare	Geo. A. Slaght, Dayton	180 00
35	Bay Mare	Geo. A. Slaght, Dayton	125 00
36	Brown Gelding	Geo. A. Slaght, Dayton	130 00
37	White Gelding	Geo. A. Slaght, Dayton	170 00
38	Black Mare	Geo. A. Slaght, Dayton	225 00
39	Bay Gelding	Geo. A. Slaght, Dayton	165 00
40	Gray Mare	Geo. A. Slaght, Dayton	150 00
41	Gray Gelding	Geo. A. Slaght, Dayton	120 00
42	Bay Mare	Geo. A. Slaght, Dayton	170 00
43	Black Gelding	Geo. A. Slaght, Dayton	190 00
44	Gray Gelding	Geo. A. Slaght, Dayton	115 00
45	Gray Mare	Geo. A. Slaght, Dayton	225 00
46	Gray Gelding	Geo. A. Slaght, Dayton	135 00
47	Gray Gelding	Geo. A. Slaght, Dayton	150 00
48	Black Mare	Geo. A. Slaght, Dayton	175 00
49	Bay Gelding	Makley and Stomps, Dayton	165 00
50	Black Mare	W. F. Prather, Dayton	225 00
51	Roan Gelding	A. W. Eichelberger, Dayton	185 00
52	Bay Gelding	A. W. Eichelberger, Dayton	165 00

LIST OF GLANDERED HORSES DESTROYED—Concluded.

No.	Color and Sex.	Name and Residence of Owner.	Appraised Value.
53	Brown Mule	A. W. Eichelberger, Dayton	$160 00
54	Brown Mule	A. W. Eichelberger, Dayton	175 00
55	White Gelding	B. W. Schaefer, Dayton	90 00
56	Brown Gelding	Jno. F. Ohmer, Dayton	75 00
57	Bay Gelding	T. J. Harvey, Dayton (acute glanders)	300 00
58	Black Mare	Wm. Dennick, Dayton	185 00
59	Bay Gelding	Wm. Ward, Radnor	20 00
60	Sorrel Mare	Wm. Ward, Radnor	50 00
61	Brown Gelding	W. H. Gabriel, Cleveland	225 00
62	Brown Gelding	W. H. Gabriel, Cleveland	250 00
63	Bay Gelding	C. Michael, Dayton	225 00
64	Roan Gelding	Captain Allabach, Dayton	135 00
65	Gray Mare	J. H. Vail, Dayton	225 00
66	Gray Gelding	Mrs. D. M. Dunbar, Dayton	100 00
67	Bay Mare	John Kavanaugh, Dayton	300 00
68	Sorrel Gelding	Joe Waltz, Dayton	100 00
69	Bay Mare	I. W. Bard, Dayton	225 00
70	Bay Mare	I. W. Bard, Dayton	160 00
71	Brown Gelding	Herman Pretzinger, Dayton	75 00
72	Black Mare	Mrs. Lena Pretzinger, Dayton	75 00
73	Sorrel Mare	Albert Pretzinger, Dayton	150 00
74	Black Gelding	Walter S. Kidder, Dayton	245 00
75	Black Gelding	J. G. Schenck, Dayton	205 00
76	Bay Gelding	Martha Perrine, Dayton	125 00
77	Bay Mare	C. A. Ruge, Dayton	250 00
78	Black Mare	Webster W. Shuey, Dayton	160 00
79	Bay Mare	Fred. F. Wecker, Dayton	90 00
80	Gray Mare	Ben. Westbrock, Dayton	225 00
81	Sorrel Gelding	W. J. Blackburn, Dayton	185 00
82	Bay Gelding	T. R. Baldridge, Dayton	175 00
83	Sorrel Mare	Byrne and Palmer, Dayton	160 00
84	Sorrel Mare	Byrne and Palmer, Dayton	140 00
85	Bay Gelding	E. M. Heathman, Dayton	285 00
86	White Gelding	E. M. Heathman, Dayton	120 00
87	Black Mare	E. M. Heathman, Dayton	100 00
88	Bay Mare	National Biscuit Company, Dayton	87 50
89	Bay Gelding	National Biscuit Company, Dayton	100 00
90	Bay Gelding	National Biscuit Company, Dayton	160 00
91	Gray Mare	National Biscuit Company, Dayton	150 00
92	Gray Mare	Chas. Bischweiler, Dayton	137 50
93	Bay Gelding	M. A. Nipgen, Dayton	165 00
94	Bay Gelding	A. W. and J. W. Eichelberger, Dayton	160 00
		Total	$13,021 00

LIST OF TUBERCULAR CATTLE DESTROYED.

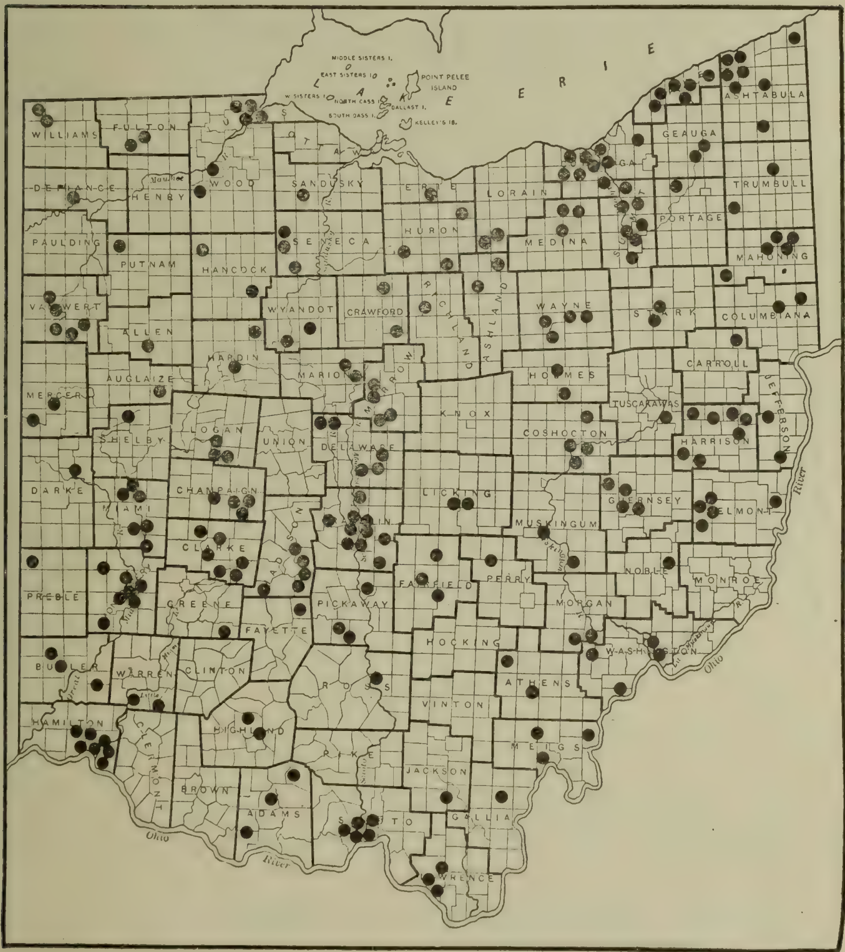
No. of Herd	Name and Residence of Owner.	Number of Cattle.	Appraised Value.
1	L. R. Foster, Macedonia	25	$1,322 00
2	E. F. Cranz, Ira	6	202 50
3	A. W. Radabaugh, Rockport	11	357 25
4	A. W. Radabaugh, Rockport	2	82 50
5	L. R. Foster, Macedonia	3	147 50
6	Ed. Shanafelt, Akron	2	62 50
7	Wayne County Infirmary, Wooster	16	480 00
8	Elam Horst, Weilersville	4	153 00
9	Edward Hall, Galena	2	55 00
10	F. P. Hills, Delaware	24	1,005 00
11	E. Kroll, Parma	7	370 00
12	H. U. Burgett, Geneva	3	90 00
13	Chas. Woodworth, Geneva	4	130 00
14	A. J. Decker, Hilliards	2	90 00
15	Wm. H. Evans, East Akron	7	315 00
16	J. C. George, Geneva	2	85 00
17	L. J. Shreve, Beloit	2	110 00
18	Thos. A. Simons, Columbus	7	540 00
19	Fred. Ganderton, Bedford	7	395 00
20	C. K. Conkle, New Waterford	10	312 00
21	G. E. Roberts, Leonard	27	1,460 00
	Total	....	$7,764 25

SWINE DESTROYED ON ACCOUNT OF RABIES.

No. of Swine	Name and Address of Owner.	Appraised Value.
9	F. F. Thompson, Brunswick	$45 00
	Total value of all animals destroyed by the Board	$20,830 25

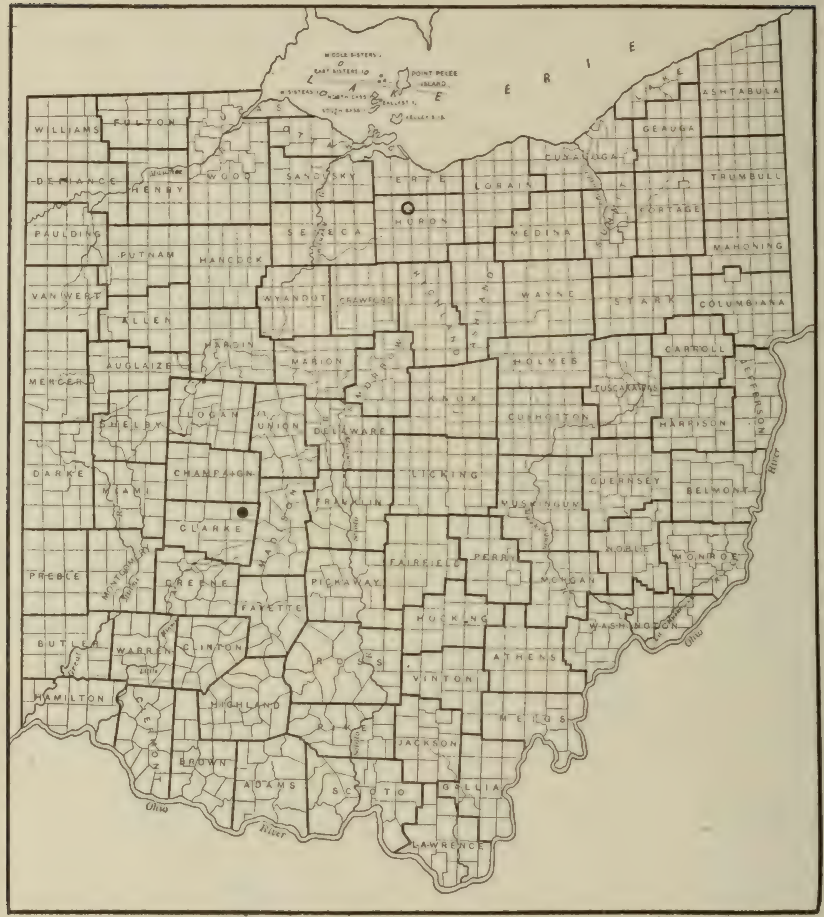
Outlines of the work of the Board in the investigation and control of the various contagious and infectious diseases among animals, together with maps showing the distribution of these diseases as far as they have come to the knowledge of the Board, are given in the following pages in the usual form.

TRIPS AND LABORATORY INVESTIGATIONS.



The black spots indicate the townships where trips were made or laboratory investigations were conducted by the Board. Over two hundred and twenty-five trips and field investigations were made.

ANTHRAX AND BLACK LEG (*Quarter Ill*).



Only one outbreak of true anthrax has been officially investigated by the Board in five years. This occurred near Hudson, Summit County, in 1903.

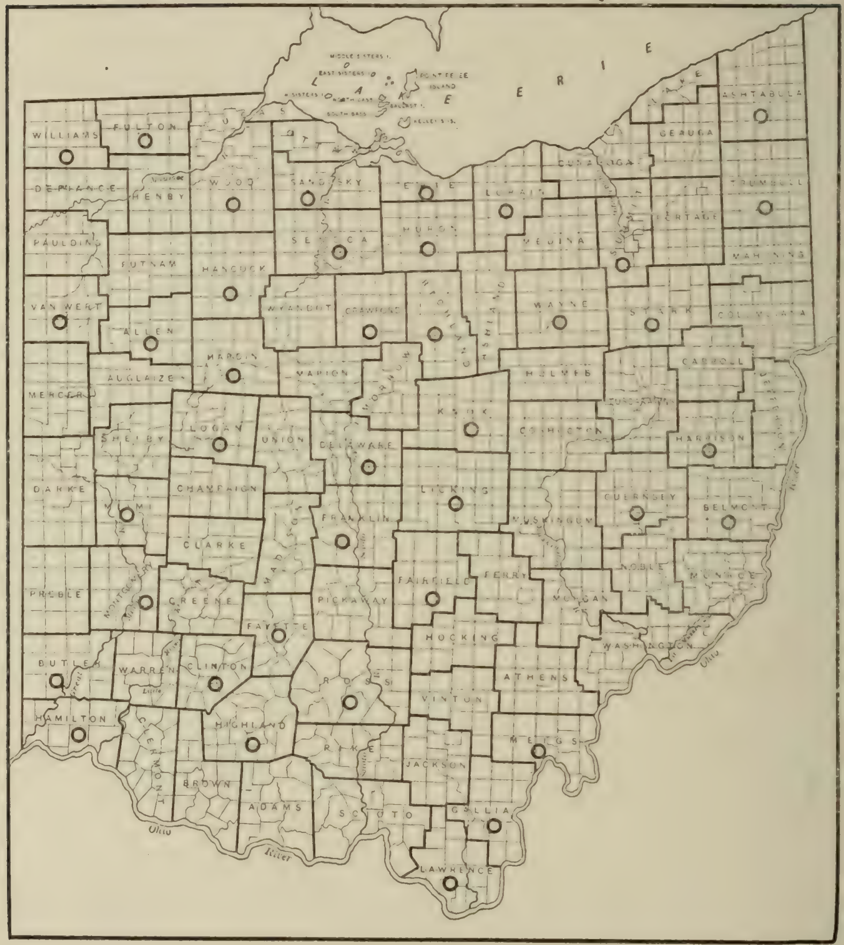
Black Leg or Quarter Ill (Symptomatic Anthrax) of calves has been reported from year to year from different sections of the state. The first outbreak investigated by the Board occurred on a farm occupied by Willie Neer in Pleasant township, Clark county. The investigation was made on December 18th, 1906, upon a report received from Dr. E. R. Stockwell of Mechanicsburg. One yearling steer had died and was disposed of a few days before the locality was visited, and a second animal (also a steer) was found dead at the time of the investigation. Microscopical examination in the laboratory demonstrated the presence of the bacillus of Black Leg in the affected tissues of the dead animal.

The disease was also reported from Huron county, but no investigation could be made by the Board.

Preventive inoculation is recommended as the only successful means of controlling black leg in districts where outbreaks are known to occur.

ACTINOMYCOSIS (*Big Jaw, Lump Jaw*).

IN CATTLE.



The counties from which the disease has been reported during the year are indicated by means of circles on the map.

Actinomycosis appears sporadically among cattle in practically all portions of the state. Its greatest prevalence seems to be in low, rich, bottom land. Horses, sheep, swine, dogs and cats are occasionally affected.

The fact that an effective remedy has been found makes its occurrence of less importance from a "sanitary police" point of view, than formerly. Actinomycosis occurs also in human beings, but the danger of direct infection from affected animals, if it occurs at all, must be very slight.

The cause of the disease is a vegetable parasite, Actinomyces bovis, which grows on various grains and grasses, but notably on the heads of barley. With the peculiarly constructed awns of this plant, which work their way into the tissues of the animal, sometimes through previously existing wounds, this parasite may gain a foothold, and by further development, produce the tumors characteristic of the disease. As the name implies, the jaw is the principal seat of the disease, but other parts of the body, tongue, throat, lungs, udder, skin or lymphatic glands, may also become infected.

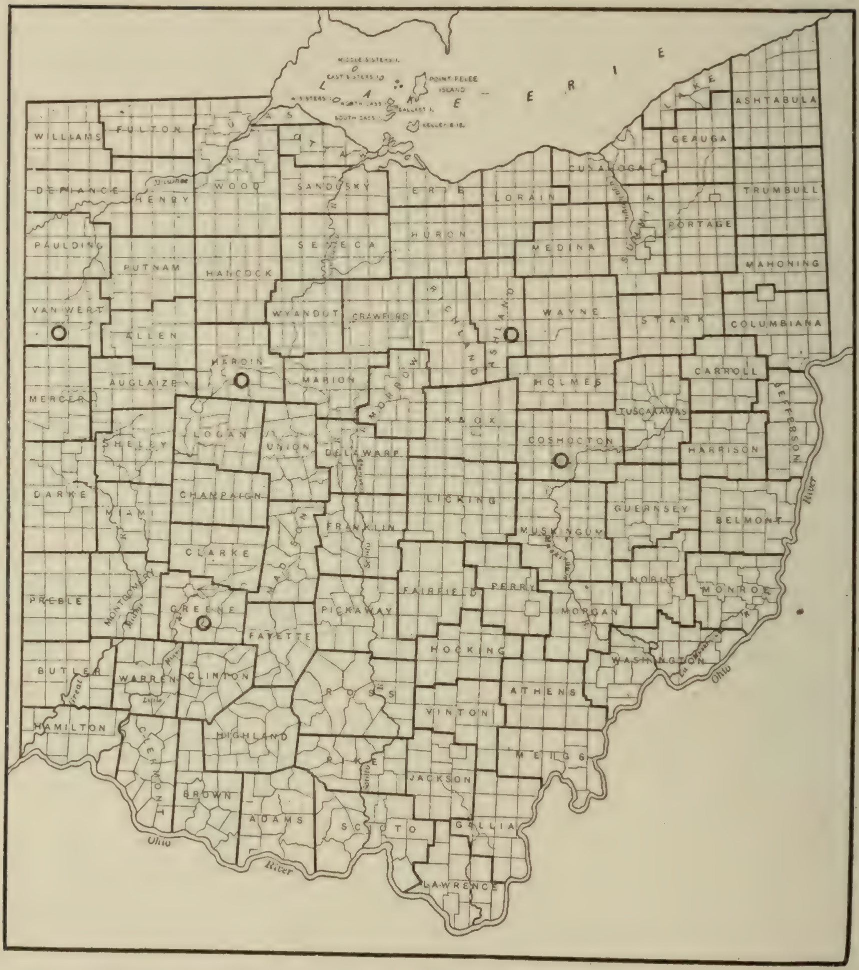
Animals affected with lump jaw should be put under the care of a veterinarian. As far as the use of the meat from affected animals with local forms of the disease is concerned, although it cannot be said that any great danger attends its use as food, the practice is attended with the same objections as is the use of meat from animals suffering from any other disease, and should therefore not be encouraged.

When the disease is limited in extent, and strictly local, the carcasses of animals are considered fit for human food, provided no emaciation exists, and provided that the affected parts (the entire head, when the jaw is the seat of the disease) be removed under the direction of a competent meat inspector.

Requests are sometimes received from local boards of health to examine animals that are reported to be affected with actinomycosis. Whenever possible, these requests are complied with, but in most cases the parties making the requests are advised to obtain the services of local veterinarians, the time of the veterinarian of the Board being fully occupied with matters pertaining to the more dangerous, infectious and contagious diseases.

COITAL EXANTHEMA (*Venereal Disease*).

IN HORSES.



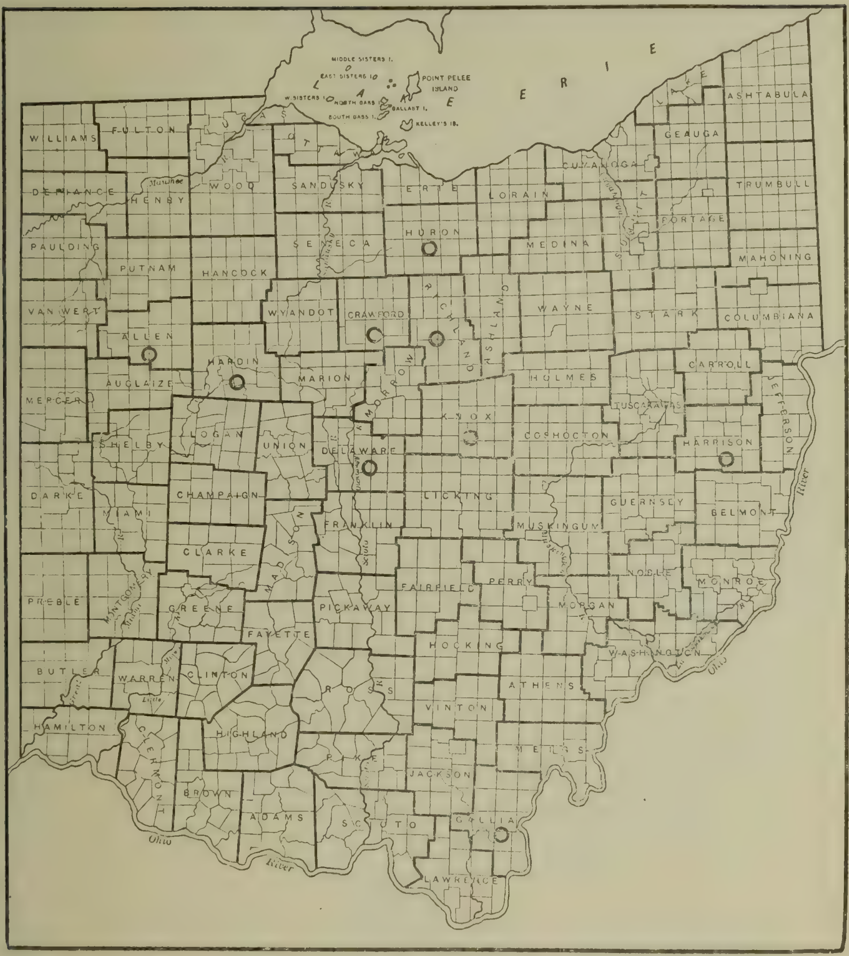
The circles on the map indicate the counties from which the disease was reported during the year.

Coital Exanthema was reported from Van Wert, Hardin, Greene, Ashland and Coshocton counties. The disease is propagated from animal to animal by breeding. Its course is usually mild, as a rule terminating in recovery in about two weeks.

From a "sanitary police" point of view its occurrence is of importance on account of its resemblance, in certain respects, to dourine (Maladie du coit), an exceedingly contagious and destructive disease of the horse. Dourine is not known to exist in this state, but since it has been reported from other states in the Union its introduction into Ohio must be guarded against by careful consideration of reports of maladies with which it may be confused.

SO-CALLED FOOT ROT.

In Sheep.

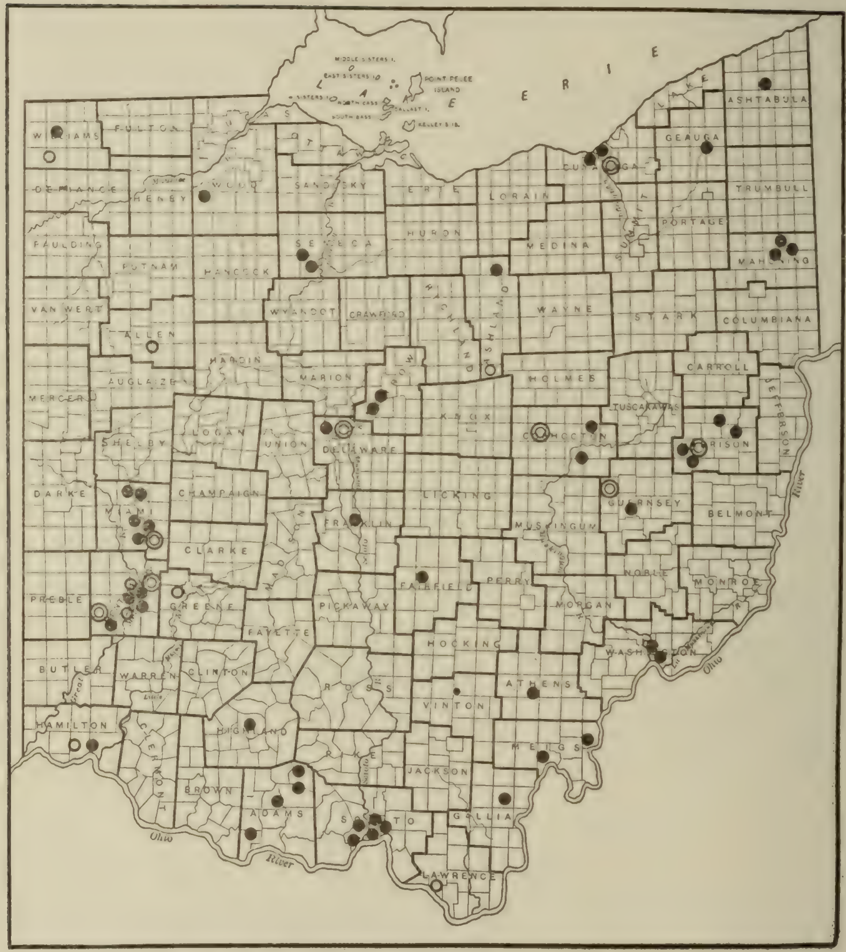


Map showing counties from which the disease was reported during the year.

So-called foot rot in sheep was reported from a number of localities. Although none of these reports were investigated it is hoped that provision for taking up this important work will be made for the next two years.

GLANDERS OR FARCY.

IN HORSES.



The black spots on the map indicate the localities where investigations of reported outbreaks of glanders were made during the year.

The small circles indicate points where cases were disposed of by local veterinarians and reported later as glanders.

The double circles indicate places where "suspected" glandered horses are in quarantine.

The laws of Ohio provide that any person having in his possession, or under his care, any animal which he knows or has reason to believe is affected with a dangerously contagious or infectious disease must make known the same to the State Board of Live Stock Commissioners, or to some members thereof, or to the sheriff or the constable of the proper county, to be by him communicated to the Board. Of the list of diseases recognized by the Board as belonging to this class, glanders of horses is one of the most important.

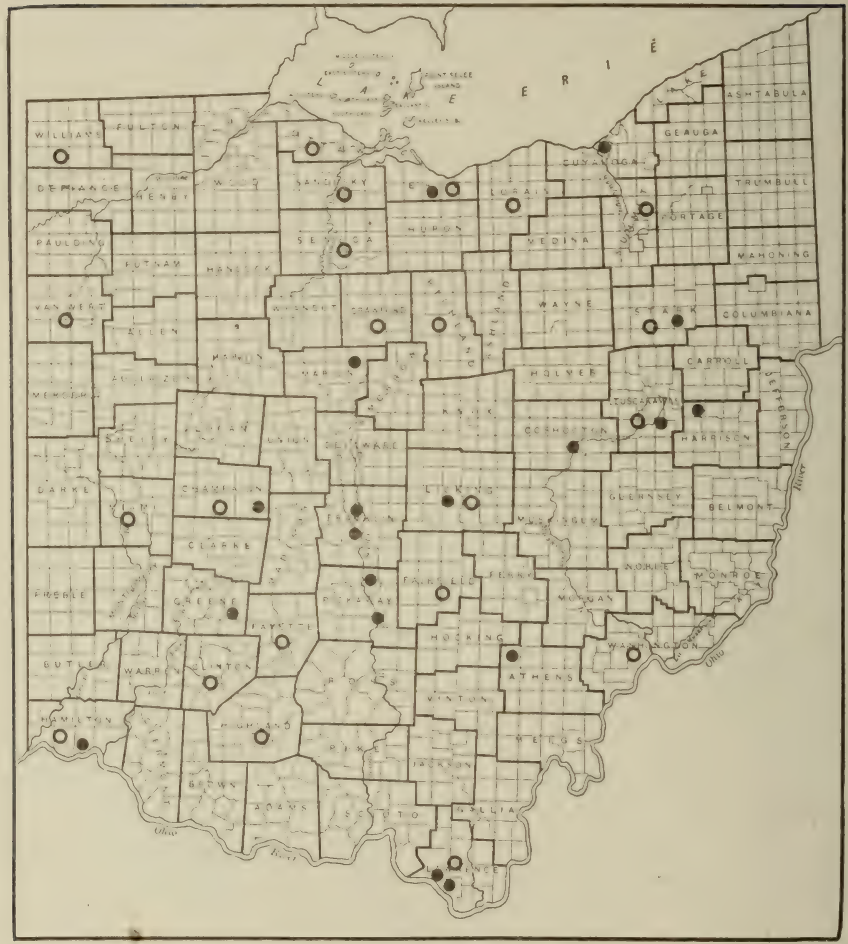
Veterinarians, owners or attendants of horses are therefore required under the rules of the Board to report at once all cases of suspected glanders. The penalty for failure to comply with this regulation is not less than one hundred dollars ($100.00) and not more than seven hundred dollars ($700.00). See Section 4211-16c, R. S. of Ohio.

Where outbreaks of glanders are investigated by the Board, all animals found to be infected are ordered destroyed, and their carcasses burned or buried (as circumstances may require) at once. Where it is deemed necessary, all exposed animals are subjected to the mallein test. All animals that give a distinct reaction to this test, whether they show clinical symptoms or not, are regarded as infected, and must be destroyed. Premises upon which glandered horses are discovered are immediately quarantined and quarantine restrictions are continued in force until all affected animals have been destroyed and disposed of according to the regulations of the Board, and the premises thoroughly disinfected under the direction of the state veterinarian.

Horses affected with glanders in the chronic stage of the disease, which may be adjudged capable of rendering some service at the time they are destroyed, are caused to be appraised by two disinterested persons. The amount of the appraisal is reported by the Board to the Governor with the recommendation, if the matter be approved by him, that the proper appropriation be made by the next convening legislature to pay the owner for his loss.

Horses with acute glanders are not appraised under the rules of the Board, and no recommendation is made for the reimbursement of the owner for the loss of such animals. Horses diseased at the time they passed into the posession of the owner are also destroyed without being appraised, as required by Section 4211-25, Revised Statutes of Ohio.

HOG CHOLERA AND SWINE PLAGUE.



The black spots on the map indicate the localities from which the diseases were reported, and where the Board made investigations or rendered assistance.

The circles show, by counties, the localities from which the diseases were reported by local veterinarians.

Hog cholera and swine plague affect animals that constitute the basis of an industry representing millions of dollars, and which suffers annual losses of over half a million dollars, due chiefly to the ravages of these diseases. Their control is not receiving, and cannot receive, the attention that is demanded from the Board of Live Stock Commissioners until provisions are made for conducting the work in an effective manner.

The control of hog cholera and swine plague requires large funds, and with these intelligent and willing co-operation on the part of the owners of swine. Many owners of swine still manifest a tendency to suppress information regarding the appearance of these diseases in their herds, rather than to aid the Board in locating outbreaks. The explanation of this is apparently the fear entertained by the owners of affected animals that any measures that are enforced with a view to controlling the diseases will necessarily result in a pecuniary loss to them. While this may be true in a certain sense, in a few cases, it is certainly not so when a broader view is taken of the subject.

After either of these diseases has affected an animal, that animal, in all probability, will be a total loss to the owner. In most cases the diseases are incurable, and the meat of a diseased animal is not considered as fit for human food.

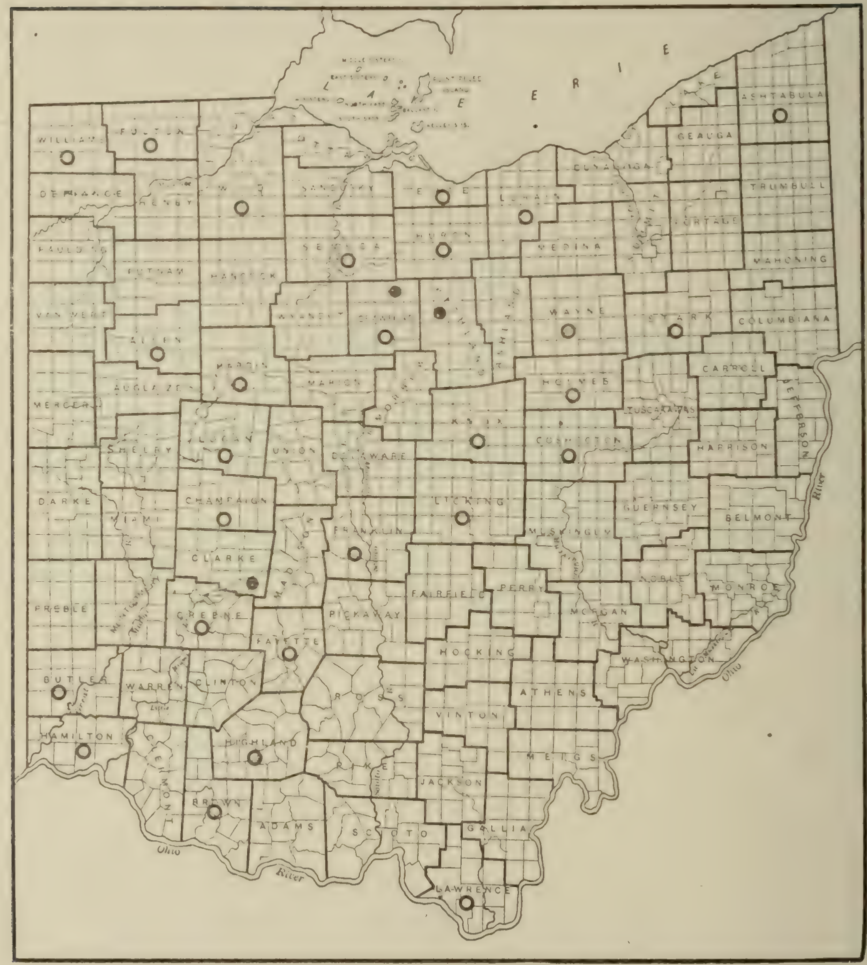
The Board is endeavoring, as in the past, to aid the swine breeders and feeders of the state in controlling these diseases by inviting the owners of infected herds to report outbreaks as soon as they become known, and receive in return advice and assistance, where the latter can be given, that will lead to the saving of at least part of the herd, and will tend to check the progress of the disease to neighboring farms.

It has been shown that the introduction of certain sanitary measures will do more toward saving a large part of an infected herd of swine than any medicine yet discovered.

A bulletin on the prevention of swine plague and hog cholera was issued by the Board some time ago; copies of this are sent to all persons applying for the same, or who request information contained in it.

INFECTIOUS KERATITIS (*Sore Eyes.*)

IN CATTLE.



The circles on the map indicate the counties from which infectious keratitis in cattle was reported by local veterinarians.

The black spots indicate localities where the Board made investigations of outbreaks of a similar disease in sheep.

During the warm season, especially the latter part of summer, this infectious eye disease is frequently reported. It affects the eyes of cattle, and usually remains strictly localized. The course of the disease is short, and usually terminates in perfect recovery within a few weeks. In a small per cent. of cases there may be permanent impairment of sight, or even complete loss of one or both eyes.

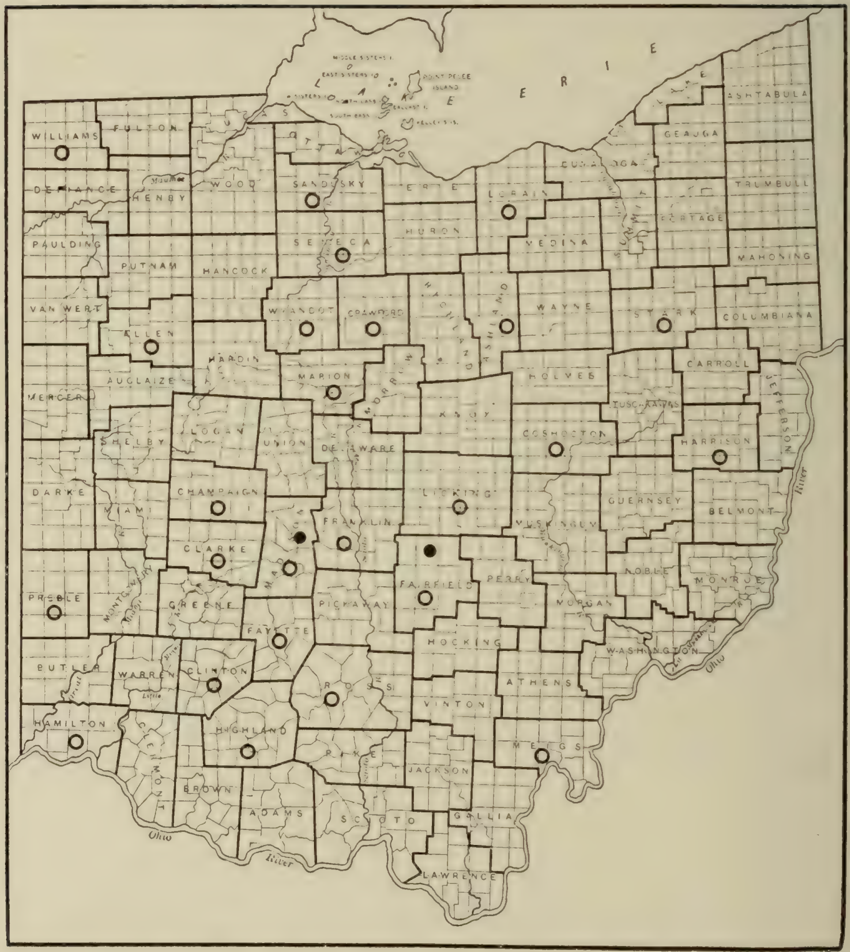
On the whole the disease is not considered a dangerous one, the loss occurring from it, as a rule, being confined to slight and temporary loss of flesh by the affected animal.

Owners reporting the existence of the disease in their herds or flocks are advised to isolate affected animals, and to treat their eyes with an antiseptic wash. No further regulations for the control of the disease are advised by the Board.

A similar disease, affecting sheep, is also occasionally reported to the Board. The measures recommended for its prevention or treatment are the same as those for cattle.

NODULE DISEASE.

IN SHEEP.



The circles on the map indicate the counties that are known to contain infected pastures.

The black spots indicate localities where the appearance of the disease was investigated by the Board during the past year.

Nodule disease has been reported from different sections of the state, twenty-five counties containing farms infected with the disease. Last year only fifteen counties had been reported.

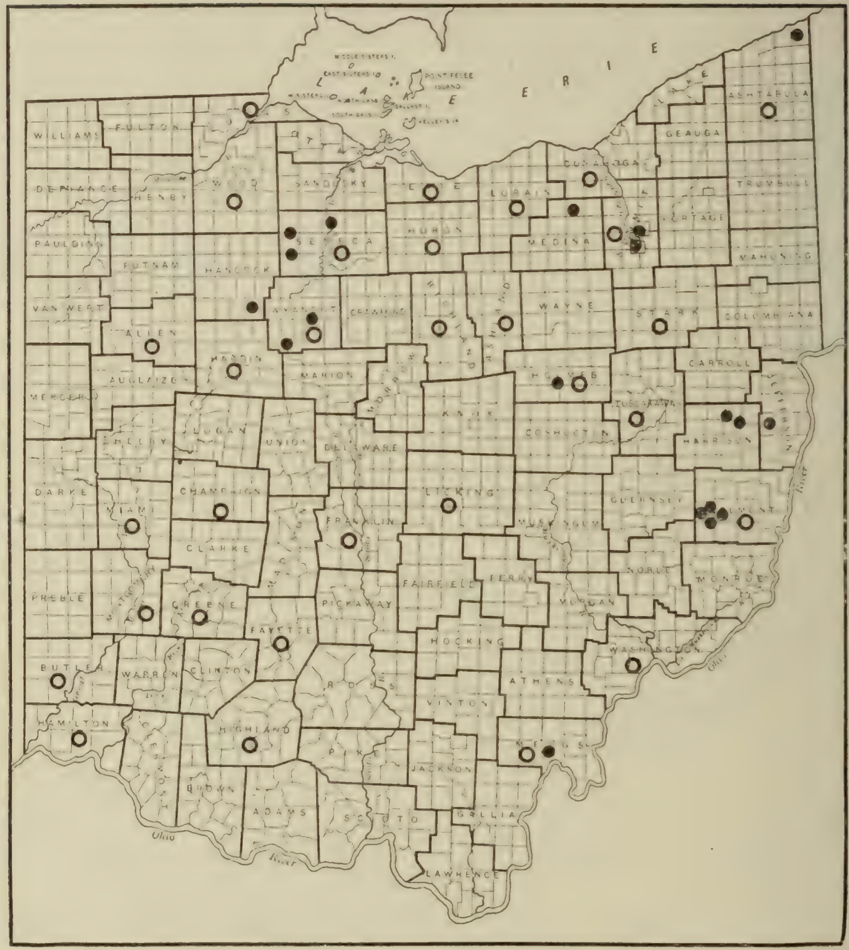
Nodule disease (or Nodular Disease) is caused by an intestinal parasitic worm (Oesophagostoma Columbiana), which causes the appearance of various sized nodules (hence the name) in the walls of the large and small intestines of infected animals.

Young pregnant ewes seem to suffer more than other sheep. The disease frequently terminates in death, and in other cases it permanently affects the health of the animal. Once introduced on a farm it is difficult to exterminate. One reason for this is that the life history of the parasite is not thoroughly understood. Its history is unknown from the passage of the eggs of the mature worm with the feces to reinfection of a new host with the undeveloped or embryonic worm.

The mature worms can be eliminated from the bowels by means of worm remedies.

As a preventive, infected pastures should be subjected to cultivation in alternate years. Surface waters and wells receiving surface drainage should be avoided. Above all, care should be observed in the purchase of new stock to prevent infection of farms free from the disease.

RABIES (*Hydrophobia*).



The black spots on the map indicate the localities from which rabies was reported, and where the Board made investigations or rendered assistance.

The circles show, by counties, the localities from which the disease was reported by veterinarians and health officers.

Rabies occurs in all of our domestic animals as well as in man. The disease has become quite prevalent in Ohio, and the Board is frequently requested to assist local authorities in controlling outbreaks.

Whenever possible, reports of outbreaks are investigated and measures taken to check the spread of the disease.

In the absence of laws under which effective regulations for the extermination of rabies could be enforced, the efficiency of the work of the Board, in connection with this disease, naturally suffers.

When outbreaks occur, the owners of affected animals, as well as local authorities, should report them to the Board at once, so that the persons in charge of exposed animals may be instructed as to their care or disposition.

All dogs in the community should be muzzled at once. Exposed dogs should be killed. Exposed horses are ordered quarantined for a period of three months from the date of the exposure; cattle are quarantined four months; sheep and pigs, three months. After these periods the danger of development of the disease is practically over.

In certain instances, exposed pigs, on account of their vicious and dangerous nature when affected with the disease, may be ordered destroyed and recommendation for compensation is made by the Board.

Treatment or recovery of affected animals is out of the question. They should therefore be destroyed without delay. No compensation is recommended for such animals.

A bulletin on "Rabies in Ohio," addressed to health officers, township trustees, etc., was published in July. Copies of this may be had upon application.

SCABIES (*Scab, Mange, Itch*).

IN HORSES, CATTLE AND SHEEP.

Scabies is a most troublesome skin disease, affecting all domestic animals and man. Its cause is a small parasite, the itch mite, which is related to the spiders. There are many species, and almost an innumerable variety of these mites, each of which is the cause of a particular kind of itch or scab.

Itch mites are grouped into three genera, the species of each genus having habits differing considerably from those of other groups. These are (1) the Sarcoptes, (2) the Psoroptes, (3) the Chorioptes. Nearly every domestic animal is subject to the attacks of a species from each of these groups, consequently to several kinds of scab. Nearly all of the itch mites of our domestic animals will affect man, producing slight, but only temporary, attacks of the same disease. The Scarcoptes, however, may become very serious. The latter, with the Psoroptes, are the most important of the three groups. Figures *1,a and 1,b represent the male and female of Psoroptes communis, the cause of scab in sheep. A variety of this mite, Psoroptes communis, *var. bovis,* is the cause of the common cattle itch. Figures *2,a and 2,b represent the male and female Sarcoptes scabiei, distinct varieties of which affect the horse, sheep, goat, dog, cat, pig and man.

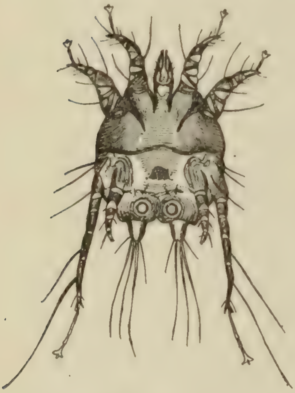


Fig. 1, a.

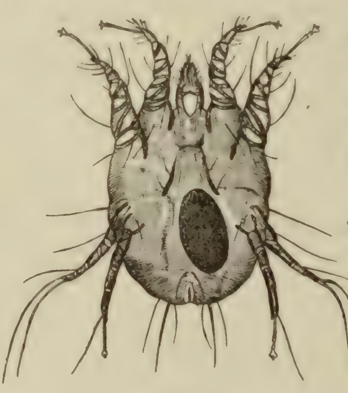


Fig. 1, b.

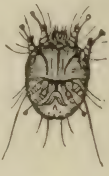


Fig. 2, a.

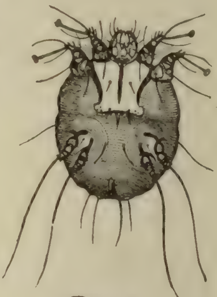


Fig. 2, b.

The Psoroptes are the larger mites, as shown by the relative sizes of the figures, which are magnified fifty diameters. A keen eye can detect the Psoroptes as minute specks, but the Sarcoptes are microscopic.

The Psoroptes live on the surface of the skin, attaching themselves to the hair, wool or projecting scales, and live by sucking the blood and lymph from the skin of the animal. The Scarcoptes live in tunnels or burrows which they make under the skin. These peculiar habits of the mites explain why some forms of mange are easily curable, and why others resist the application of the most heroic remedies.

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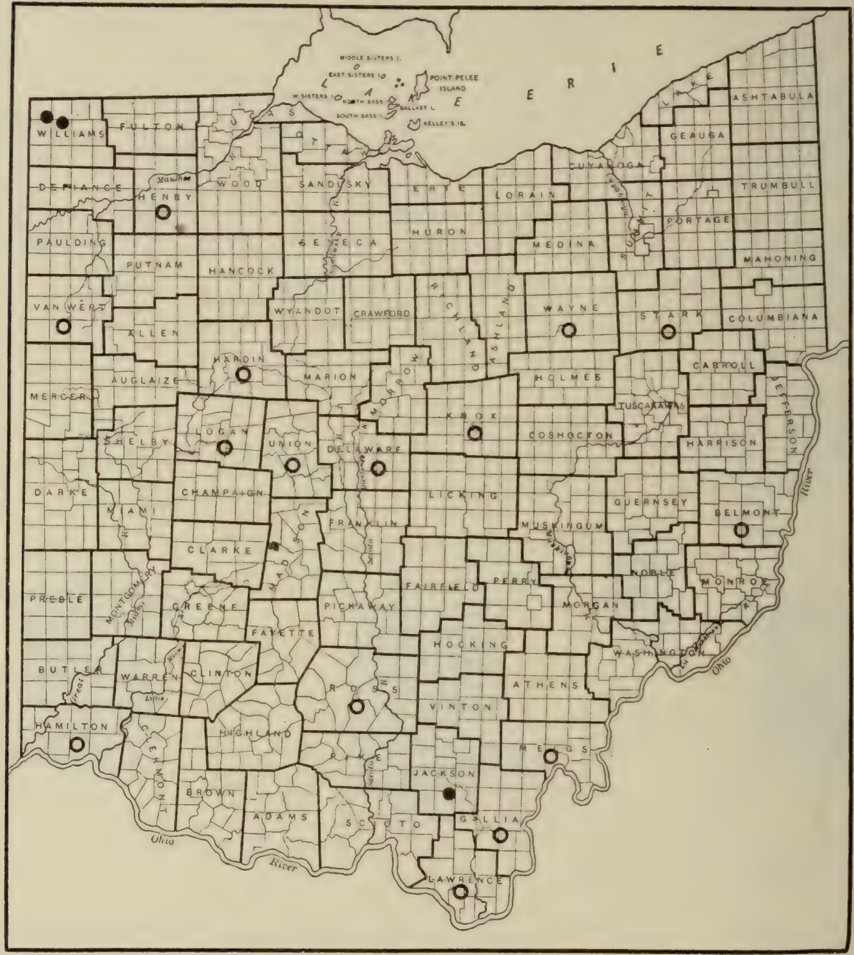
*Neumann.

The common sheep and cattle scab belongs to the first class. Dipping is the effective treatment. Two dippings are necessary to produce a cure. The first dipping kills all the mites, but does not destroy their eggs, which are always present in large numbers. After a few days the eggs hatch, and the young mites are destroyed by a second dipping that is given a week or ten days after the first.

The treatment of Sarcoptic mange consists in the persistent application, at short intervals, of various parasiticides, and proper dietetic treatment. Some cases are practically incurable.

MANGE IN HORSES (*Sarcoptic Mange*).



The circles on the map indicate the counties from which Sarcoptic mange in horses was reported by local veterinarians.

The black spots indicate localities visited by the Board for the purpose of making investigations of outbreaks.

Mange in horses in Ohio occurs chiefly as a result of exposure to infected horses shipped from the Western states. The accompanying map shows the distribution of the disease by counties, as far as it has come to the knowledge of the Board.

Mange is a very troublesome and exceedingly contagious disease of the horse, running a rather slow course and, if neglected, resulting in death from exhaustion.

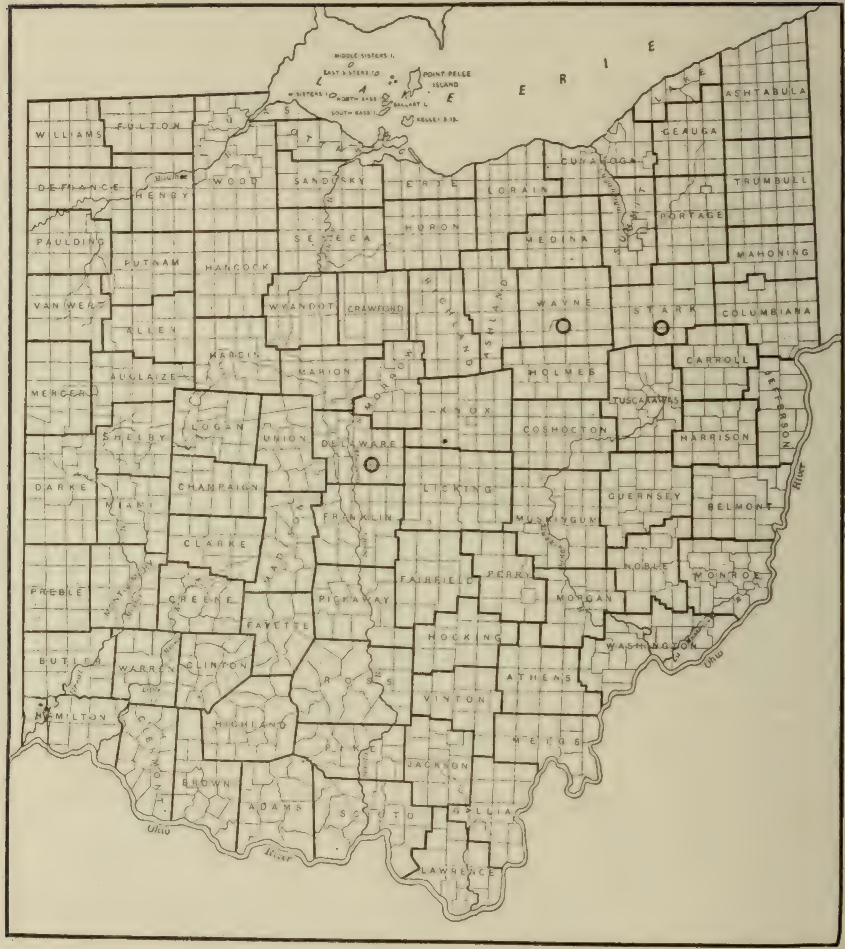
The disease is curable and responds readily to proper treatment. All affected horses should be quarantined and treated until a cure has been brought about.

The remedy for this disease, recommended by the Bureau of Animal Industry as having given the best results, is the lime and sulphur wash, prepared as follows:

"Place one-half pound of unslacked lime in a bucket or kettle. To this add enough water to form a paste. Into this paste sift one and one-half pounds of flower of sulphur and stir the mixture well. Place the sulphur-lime paste in a kettle with about three gallons of water and boil. The boiling should be continued until the sulphur disappears, or almost disappears, from the surface, which will require from one to three hours. The solution is then of a chocolate or liver color. Water may be added as necessary to replace that which evaporates during boiling. Pour the mixture and sediment into a bucket and allow two or three hours for the sediment to settle, then carefully dip off the clear liquid, taking care not to disturb the sediment. Place this liquid in a wooden receptable or keg that can be closed tightly to exclude the air, or in a glass receptacle, such as a large demijohn. To the clear liquid thus dipped off, add enough water to make six gallons. The sediment should be thrown away. This mixture can be used freely for washing the horse. As it stains the hands of the person who uses it (although it does not harm otherwise, and the stain does not last long) it may be applied with a sponge attached to the end of a stick, or rubber gloves may be worn. About one-half of the body of the horse may be covered at a time; that is, on a single day, and the application should be repeated at intervals of two or three days so long as may be necessary. In the West, where many horses are to be treated, they are dipped in lime and sulphur wash in special vats.

"This wash should be applied with a sponge to the diseased area and to the surrounding apparently healthy skin. It is well to apply a little, but not much, friction in order to cause the wash to soak through the scurf and accumulation and to penetrate into the burrows and fissures in the skin. The wash should be applied at intervals of two or three days until the cure is complete."

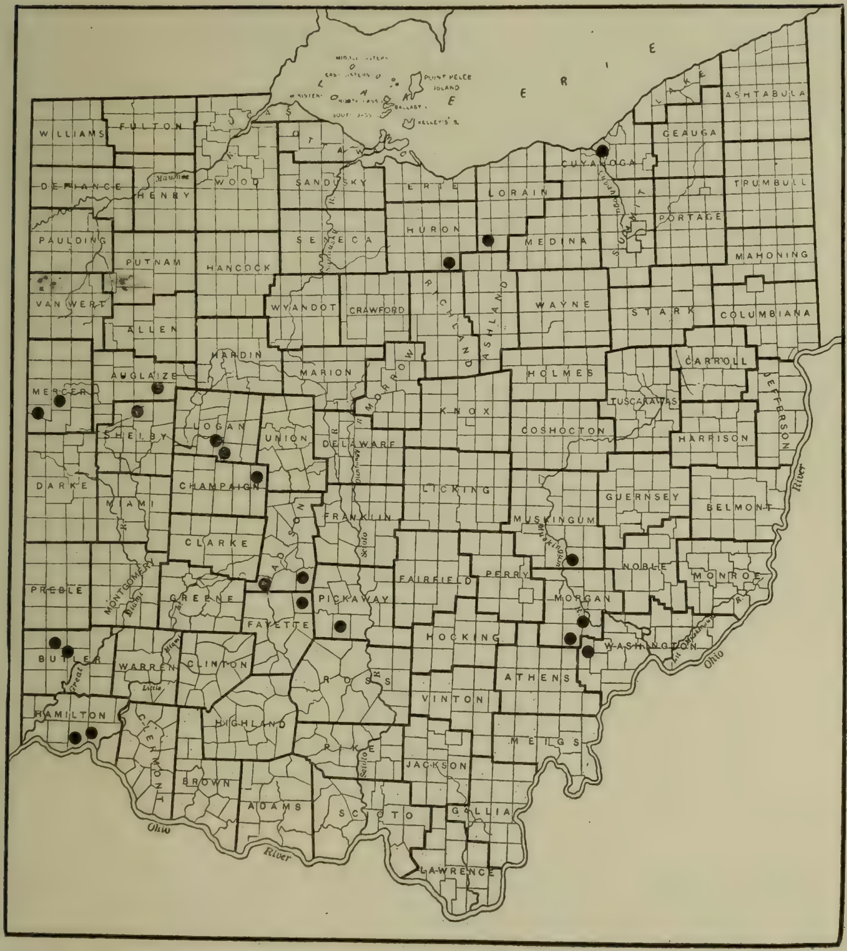
MANGE IN CATTLE.



The circles on the map show, by counties, the localities from which cattle mange was reported by local veterinarians. The reports were not received until after the affected cattle were disposed of, and consequently no investigations were made by the Board.

SCABIES (*Scab*).

In Sheep.



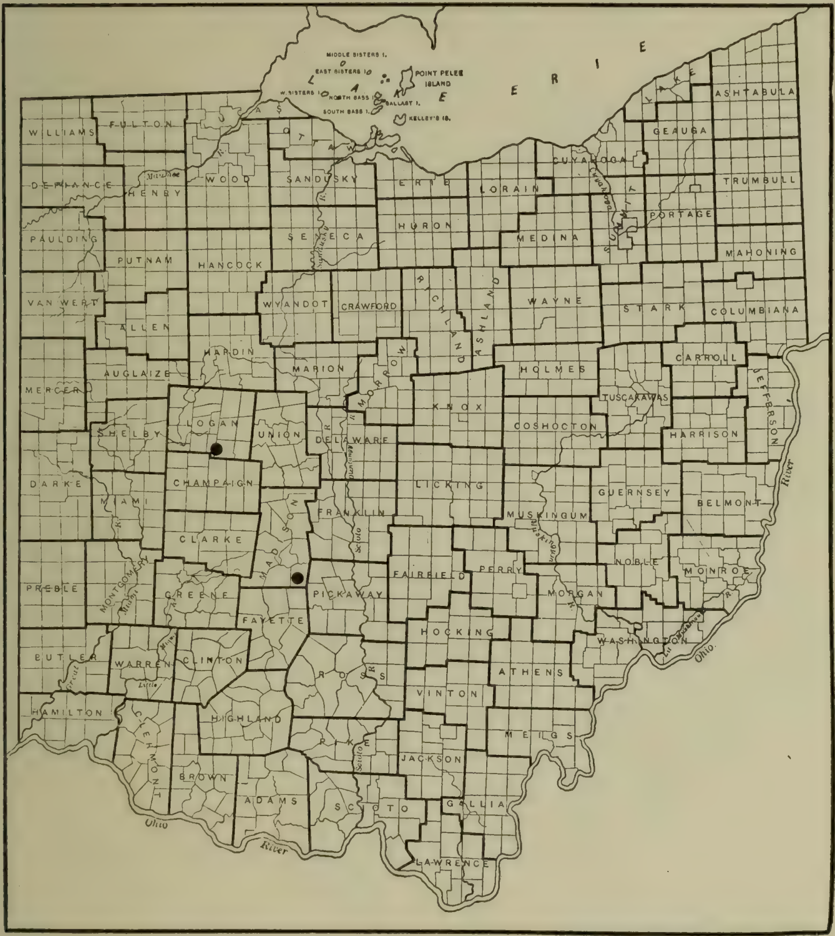
The black spots on the map indicate the localities where the disease was located during the year.

The native sheep of Ohio are free from scab. Reported outbreaks of the disease are in almost every instance traceable to shipments of infected Western sheep. Instances of this kind are becoming more numerous every year, and unless something is done to control these shipments the sheep industry of the state will suffer.

During the year scabies was located in flocks of sixteen different counties, the greatest number in six years. Two thousand eight hundred and sixty-one infected and exposed sheep were located by the Board. Of this number two thousand and sixty-five were reported by federal inspectors from various points in the United States, as having been shipped from Ohio. Seven hundred and ninety-six sheep were located in Ohio, quarantined and dipped under the direction of the Board.

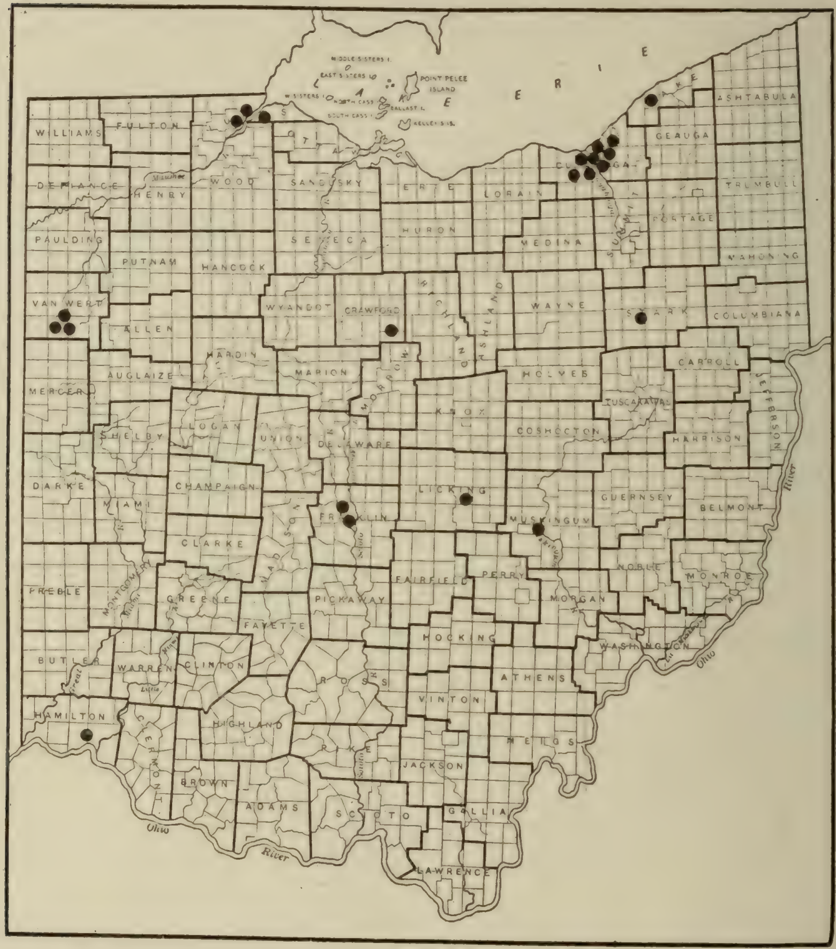
The control of scab is a very important part of the work of the Board, and is conducted in co-operation with the United States Department of Agriculture. Shipments of scabby sheep from Ohio to points where federal inspection is maintained are immediately reported to the Board, whereupon an officer of the Board visits the locality from which the infected sheep have been received and makes an investigation. According to regulations of the Board all infected or exposed sheep that can be located are quarantined and ordered dipped twice, in a recognized dip, at intervals of ten days. After the second dipping, if performed according to instructions, the quarantine restrictions are removed. Stock yards or pens in which scabby sheep have been received are quarantined, and their use for sheep forbidden until after they have been disinfected according to the instructions of the Board.

SOUTHERN CATTLE FEVER (*Texas Fever*).



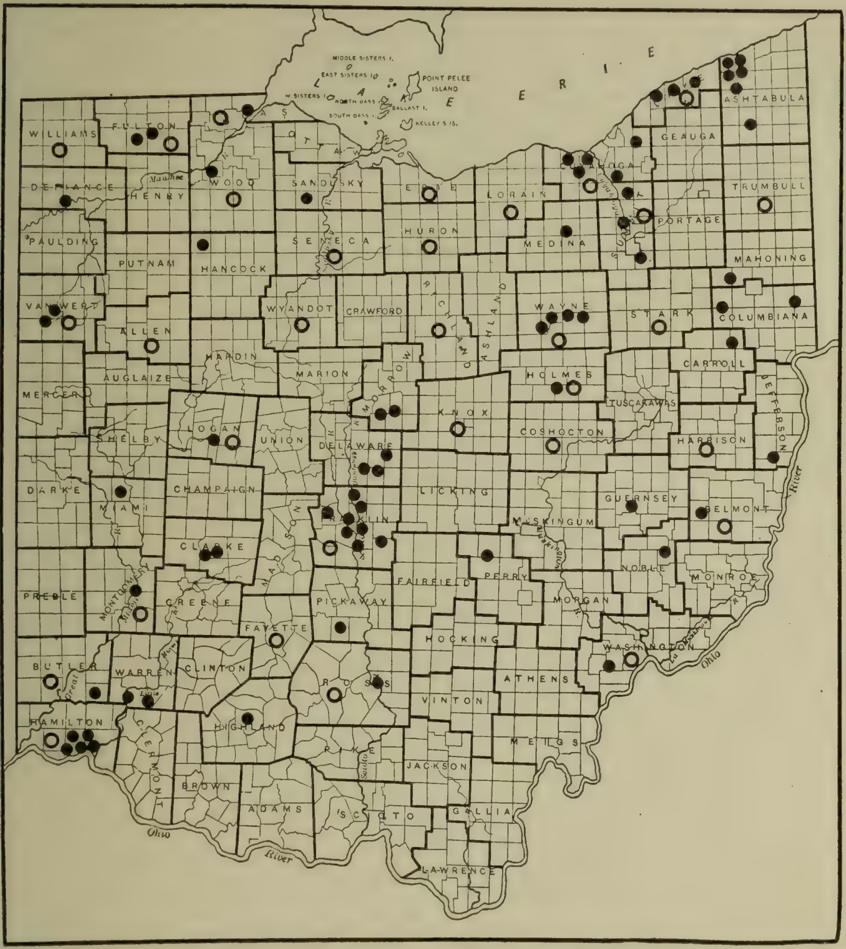
The black spots on the map indicate the localities in which outbreaks of Southern cattle fever were investigated by the Board during the year. Only two outbreaks occurred, and both were due to failure on the part of transportation companies to disinfect Southern cattle cars into which Northern, or native cattle were loaded. One of these outbreaks was at Mt. Sterling, the other at West Liberty.

SOUTHERN CATTLE QUARANTINE STATIONS.



The black spots on the map indicate the localities where quarantine pens for unloading Southern cattle for feeding and watering, or for purposes of immediate slaughter are maintained.

TUBERCULOSIS.



The black spots on the map indicate the localities where tuberculin tests were conducted by the Board during the past year.

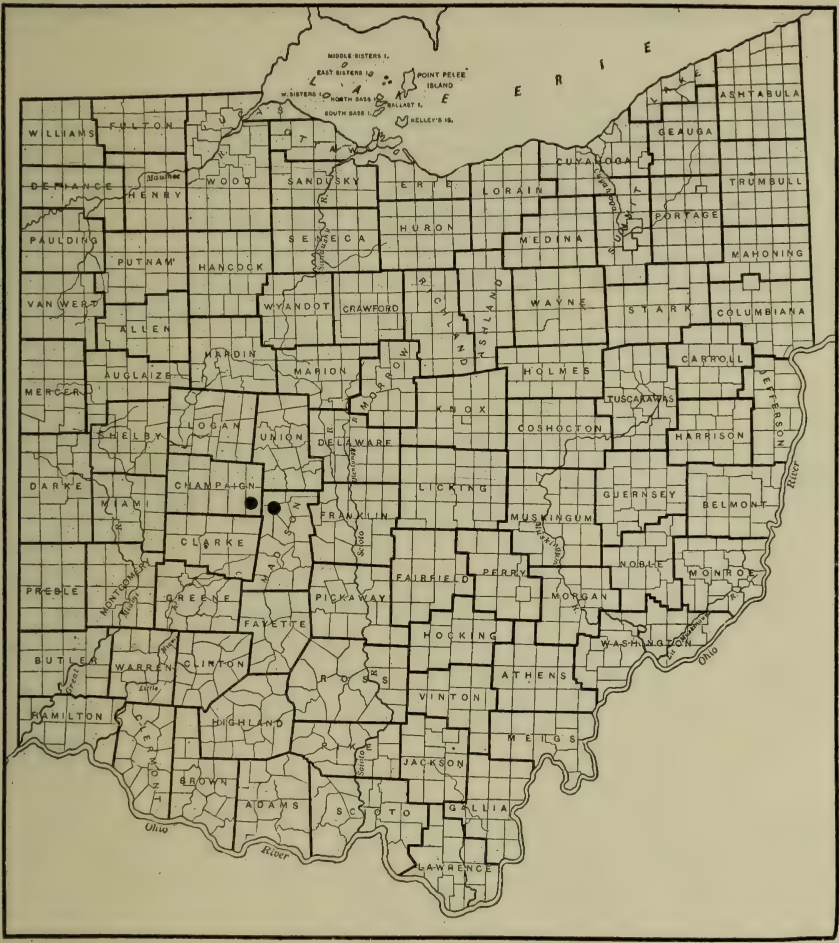
The circles indicate the counties from which the disease was reported by local veterinarians.

Interest in the matter of exterminating tuberculosis from dairy herds seems to be increasing. This is true on the part of the public, which is demanding a higher degree of purity in its milk supply, as well as on the part of the dairy owner who is gradually becoming convinced that a healthy cow, kept under sanitary conditions, gives the most profitable returns.

The Board has done everything in its power to encourage work along this line, but on account of the limited funds at its disposal, tests are made only where there is good reason to suspect that herds are really infected with the disease. Persons desiring to have a tuberculin test conducted by the Board are furnished with a form for making an application.

This form contains an outline of the conditions under which the tests are made, instructions for disinfection, etc. Applications are taken care of as nearly as possible in the order in which they are received, but owing to the limited funds at the disposal of the Board, and the demands made from other directions, it has been impossible to test all herds for which applications were received.

ULCERATIVE ANO-VULVITIS IN CALVES.



The black spots on the map indicate the localities where ulcerative ano-vulvitis of cattle was located by the Board during the past year.

Ulcerative Ano-vulvitis was first observed in some of the Western states about ten years ago, in February, 1898. About a year after this time a report was published that it had also been observed in this state. It was first observed by the Board in March, 1907, in a herd of young steers and heifers in Champaign county. Later it was reported by Dr. E. R. Stockwell, of Mechanicsburg, as existing in a herd of young cattle in Madison county.

FINANCIAL REPORT OF THE STATE BOARD OF LIVE STOCK COMMISSIONERS FOR THE YEAR BEGINNING NOVEMBER 5, 1906, AND ENDING NOVEMBER 4, 1907.

To balance of appropriation by the General Assembly for the year ending February 15, 1907	$98 74	
To appropriations by the General Assembly for the year ending February 15, 1908	5,000 00	
By expenses of officers and members of the Board		$16 40
By salaries of State Veterinarian and Assistants		2,833 30
By expenses of State Veterinarian and Assistants		498 48
By general expenses		337 61
By balance of appropriation unexpended		1,412 95
Totals	$5,098 74	$5,098 74

T. L. Calvert,
Secretary,

Paul Fischer,
Veterinarian.

[APPENDIX A.]

GENERAL RULES OF THE BOARD OF LIVE STOCK COMMISSIONERS OF OHIO.

Rule 1. When supposed cases of dangerously contagious or infectious diseases of live stock are reported to the Board of Live Stock Commissioners, the Secretary of the Board shall, when in his judgment it appears necessary, direct the State Veterinarian to make a thorough examination of the affected animal or animals; and if the State Veterinarian is of the opinion that any contagious or infectious disease exists, he shall, if deemed necessary, at once cause to be quarantined the diseased, as well as all exposed, animal or animals and premises or farms where such disease exists, and report his action to the Secretary of the Board.

Rule 2. No examinations or investigations shall be made in accordance with Rule 1 until the Secretary of the Board and the State Veterinarian are satisfied that the reports of outbreaks of disease are reasonably well founded.

Rule 3. The Board of Live Stock Commissioners, before ordering an investigation by the State Veterinarian, may require two or more reputable citizens of the county in which a reported case of dangerously infectious disease exists, to make a written statement confirming such report.

Rule 4. When the State Veterinarian shall order diseased animals, or such as have been exposed to a contagion, and any premises or farms where such disease exists, to be strictly quarantined, he may call upon the sheriffs or constables of the county or counties in which such quarantine is ordered, to execute said quarantine. All proper expense incurred in the quarantining of animals shall be paid by the owners thereof. Any quarantine ordered by the State Veterinarian shall remain in force until removed by his order.

Rule 5. In case the Board of Live Stock Commissioners shall order the destruction of any animal affected with glanders or farcy, in the chronic stage of the disease, which may be adjudged capable of rendering some service; or when, in the opinion of the State Veterinarian, it shall be necessary to prevent the spread of any contagion or infection among the live stock of the state, he may require diseased animals to be killed and their carcasses burned or buried, as he may direct; in either case, said animals shall be appraised by disinterested freeholders of the county in which such animals are owned, one to be selected by the owner of the animal or animals killed or destroyed, and another by the Board of Live Stock Commissioners; and these two, if they cannot reach an agreement, shall select a third person to act with them; these shall make the report of their findings to the Secretary of the Board of Live Stock Commissioners and he shall refer the same to the Board; and, if findings are approved, the Board shall report the same to the Governor of the State, to be by him communicated to the Legislature, with the recommendation, if the matter is approved by him, that the proper appropriation be made to pay such claims.

Rule 6. The State Veterinarian may prescribe and publish rules for disinfection of barns, sheds or premises where infectious diseases exist or have existed, and for the disinfection of harness, utensils, wagons, etc., kept on such premises.

Rule 7. Upon request of owners desiring to ship animals to other states or territories requiring certificates of health accompanying such animals, it shall be the duty of the State Veterinarian, or an inspector designated by him, to inspect said animals, and if, after inspection, the State Veterinarian is satisfied that the animals in question are free from observable symptoms of any dangerous, infectious or contagious disease for which the particular state or territory into which the animals are intended to be shipped requires inspection he shall issue the required certificate.

Rule 8. All expenses of inspection provided for in Rule 7 shall be borne by the owner or shipper who makes request for inspection, and shall be at the rate of five dollars ($5) per day, or fraction thereof, and all necessary expenses of travel and subsistence.

Rule 9. Owners of abattoirs or other persons desiring to import Southern cattle for the purpose of immediate slaughter must apply to the Board of Live Stock Commissioners for a permit to unload such cattle within this State. Upon receipt of a request for such permit, the Secretary shall direct the State Veterinarian to inspect the pens and abattoirs to be used for the purpose specified, and if these are found to conform with the requirements of the Board of Live Stock Commissioners for the unloading of Southern cattle, the Secretary and the State Veterinarian shall issue the permit.

[APPENDIX B.]

LIST OF LICENSED VETERINARIANS IN OHIO WITH THEIR PRESENT ADDRESSES.

Anderson, Fred E.	Carey.
Atkins, Peyton D.	Kingston.
Axby, Wm. Allan	Harrison.
Bard, J. Eldoras	Niles.
Bay, Charles Henry	Cambridge.
Blanchard, L. D.	Canton.
Blattenberg, John H	Lima.
Bratten, John W	Cincinnati.
Bernath, Robert I	Wauseon.
Bretz, Stanton E.	Nevada.
Boggs, H. S.	Kingston.
Bowman, Albert T	Canton.
Brobeck, Ivan J.	Richwood.
Brown, Stanley W.	Hamilton.
Brown, Harry M.	Columbus.
Brown, Walter A	Columbus,
Buck, Albert	Urbana.
Burson, Wm. M	Cincinnati.
Burrows, Samuel	Cleveland.
Butcher, James C.	Lima.
Brumley, O. V	Columbus.
Callander, Edgar H	Zanesville.
Carl, Louis W.	Columbus.
Carver, Rolley J.	Columbus.
Case, Claude H.	Akron.
Castle, Bert W	New Lyme Sta.
Chandler, George H.	Marseilles.
Clark, Wm. R.	Wauseon.
Crane, Casimir C.	Akron.
Craver, Samuel R.	Youngstown.
Clemons, W. E	Granville.
Cliffe, Geo. W.	Upper Sandusky.
Christmann, H. A.	Cincinnati.
Collins, Albert	New London.
Cook, Geo. Edw.	Fayette
Cook, Louis P.	Cincinnati.
Cooley, Arthur S.	Cleveland.
Cunningham, Albert E.	Cleveland.
Dailey, Harry Grant	Wooster.
Daugherty, Wm. A	Cleveland .
Detchon, Aubrey B	West Farmington.
Dettman, Fred. H	Troy.
DeTray, Ervin M.	Grand Rapids.
Dillahunt, Peter A.	Springfield.
Dock, Norton	Cincinnati.
Dunn, Lewis J	Cleveland.
Edgington, Bruce H	Mt. Sterling.
Emrick, David Artie	West Milton.
Eddy, Wm. C	Cleveland.
Fair, John D.	Berlin.
Falk, Adolph G.	Cincinnati.
Faun, Geo. Clifton	Bradford.
Ferry, Wm. Austin	Sandusky.
Frederick, Charles B	Canton.
Frese, Geo. L	Toledo.
Fischer, Paul	Columbus.
Fitzgerald, A. D.	Columbus.
Fogle, Chas. W.	Leipsic.
Foss, Louis P	Cincinnati.
Foster, J. E.	Coshocton.
Fulstow, Harry	Norwalk.
Gribble, Wm. Henry	Washington C. H.
Griffin, Frank	Columbus.
Good, Jos. M.	Cincinnati.
Handley, Geo. A.	Ironton.
Henderson, Clarence L.	Flushing.
Hess, Edw. O	Elyria.
Hillock, Thos. B.	Columbus.
Hillock, N. W.	Columbus.
Hilty, Reuben	Bluffton.
Hinkley, Emmet R	Sandusky.
Holland, Donald G.	Wellington.
Howard, S. R	Hillsboro.
Howe, Wm. R.	Dayton.
Huth, Otto O	Cincinnati.
Inskeep, Charles E.	Urbana.
Jansman, Edw. S.	Cincinnati.
Jeannin, Augustus J	Minerva.
Jefferson, Jos. Henry	Chicago Junction.
Jeffries, Henry N.	Greenville.
Johnston, Jos. B.	Gallipolis.
Johnston, James E.	Piqua.
Jones, Micajah J., Jr.	Blanchester.
Kramer, Wm. A.	Dayton.
Kent, Samuel H.	Cadiz.
Kenwell, Wm. Henry	Orrville.
Kline, Albert J.	Wauseon.
Korfhagen, Harry J.	Cincinnati.
Labron, Wm. A	Xenia.
Lamb, Morgan B	Columbus.
Langdon, Elmer C	Sabina.
Lathrop, Eugene G.	Weston.
La Viers, Wm. Nelson	Dalton.
Lee, James A	Belleville.
Leidy, Edgar T.	Canal Winchester.
Leist, Chas. E.	Columbus.
Limbaugh, Edw. C.	Mt. Vernon.
Little, Herbert Leroy	Jeffersonville.
Manley, Henry M.	Dayton.
Marchand, George U	Uhrichsville.
Matz, Wm	Clyde.
Maynard, Lee H. P	Columbus.
McClain, M. C.	Jeromeville.
McGingan, Wm. O.	Salem.
McLeod, Jno. C.	Cincinnati.
McMillen, Henry W.	Brookville.
McNaughton, Wm. H	Warren.
Metzger, A. E.	Clyde.
Metzger, Edw. Louis	Louisville.
Meyer, Jno. C	Cincinnati.
Michael, V. E	Dayton.
Miller, Henry Paul.	Westerville.
Miller, Arthur E.	Lake.
Miller, Herman W	Westerville.
Moss, Harry T.	Germantown.
Myers, Sidney D.	Wilmington.
Myers, Harry E	Carey.
Newton, Jno. V	Toledo.
Newton, H. M.	Hamilton.

LIST OF VETERINARIANS—Concluded.

Nugent, Oliver F	Cleveland.
Owens, Byron A.	Mansfield.
O'Dell, Edw. C.	Gahanna.
Planz, Jno. F.	Akron.
Prahl, Jno. F.	Columbus.
Pettiford, Oscar C	Ada.
Price, James W.	Lancaster.
Price, Edw. L.	Circleville.
Priest, Frederick	Newark.
Potter, Arthur F.	Delaware.
Redhead, Wm. H.	Cleveland.
Reinhardt, Alvin A	Apple Creek.
Reese, Geo. C	Edon.
Rowe, Henry J.	Sandusky.
Ruby, Isaac A.	Plymouth.
Sater, C. H	Hamilton.
Shaw, Walter	Dayton.
Stansbury, James E.	Pomeroy.
Severcool, Lucius A.	Elyria.
Sheets, F. F.	Van Wert.
Shepard, Edgar H	Cleveland.
Schneider, Geo. L.	Canton..
Skeels, Herbert T.	West Mansfield.
Stevens, Jacob F.	West Liberty.
Steinkorb, G. A.	Cincinnati.
Simons, Frank W.	Columbus.
Skidmore, Don I.	Dayton.
Smith, Victor P	Washington C. H.
Smith, Albert Clifton	Sandusky.
Schmidt, H. J.	New Bremen.
Snider, Geo. F.	Cincinnati.
Sockman, Clifford C.	Deshler.
Snow, Dalton C	Athens.
Stockwell, E. R	Mechanicsburg.
Schuh, H. L	Marietta.
Tiffin, Charles Henry	Hamilton.
Torrence, Wilfred J	Cleveland.
Townley, Henry D.	Cincinnati.
Turner, Wm. H	North Amherst.
Ward, Clarence F.	Norwalk.
Washburn, Wm. B.	Tiffin.
Webb, Geo. Coston	Akron.
Weber, Charles A.	Zanesville.
Williamson, Clement J	Bucyrus.
Williams, Howard L	Newark.
Wilson, Jno. P	Hamilton.
Wingard, Benj. F.	Montpelier.
White, David S.	Columbus.
Whitehead, Robert W	Youngstown.
Whitwood, Luther D.	Jefferson.
Wolf, Arvins Jacob	Mineral City.
Worcester, Harry	Middletown.
Worthington, Wm. D	Harrisburg.
Wynn, Irvin A.	Kenton.
Yule, Charles C.	Bellefontaine.

REPORT

OF THE

Fourteenth Annual Convention

OF

The Ohio Dairymen's Association

HELD IN

Townshend Hall and Main Building
Ohio State University Campus, Columbus
February 12, 13 and 14, 1908

PREPARED BY

E. S. GUTHRIE, Secretary and Treasurer

Dedicated to the
Memory of Prof. John W. Decker,
Who died June 21st, 1907.

Columbus, Ohio, April, 1908.

Hon. T. L. Calvert, *Secretary of the Ohio State Board of Agriculture,*
Columbus, Ohio:

Dear Sir:—I hereby transmit to you for consideration and publication, the fourteenth annual report of the Ohio Dairymen's Association.

Trusting the report will meet with your approval, I am

Yours sincerely,

E. S. Guthrie, *Secretary-Treasurer.*

OFFICERS OF THE OHIO DAIRYMEN'S ASSOCIATION.

President, John D. Nichols, Cleveland, Ohio.

Vice-President, J. O. Winters, Greenville, Ohio.

Secretary and Treasurer, E. S. Guthrie, Columbus, Ohio.

DIRECTORS.

L. P. Bailey, Tacoma.

E. W. Hoyt, Columbus.

Oscar Erf, Columbus.

E. S. Rice, Lockwood.

J. E. White, Greenfield.

C. A. Pontius, Canton.

A. F. Neal, Macedonia.

Notes by the Secretary and Treasurer, E. S. Guthrie

The secretary wishes to thank everyone who helped to make the convention a success. It is impossible for an organization to succeed without the aid of each member, and the secretary is glad to say that without a single exception help was given when asked, and a number offered their services some time before the convention.

Because of small funds the Ohio State Board of Agriculture is lending a helping hand in publishing the report. In behalf of the Ohio Dairymen's Association I want to thank the Board.

The Association is grateful to the dairy supply companies for their generous contributions.

The secretary wishes to beg Mr. John D. Nichols' pardon for forgetting to include his company in the special prize list with other creameries and milk companies.

The Report

The fourteenth annual session of the Ohio Dairymen's Association was called to order in Townshend Hall at 9:30 a. m., on February 12, 1908. The attendance at the first session was the largest in the history of the Association. The convention was called to order by the President, J. D. Nichols, who said:

Ladies and gentlemen, I am highly gratified indeed to see so large an attendance at the first session of our convention. Instead of opening the convention to empty seats, as we have done on many occasions, I find that standing room is at premium. This speaks well for the growing interest in our work and assures us that this will be the largest and best convention we have ever held. We have a very interesting program arranged and I am sure you will enjoy everything on it. I will not take up any more of your time, but will introduce Prof. Oscar Erf who will deliver the address of welcome.

ADDRESS OF WELCOME.

BY O. ERF.

On behalf of the President of the Ohio State University and on behalf of the Dean of the Agricultural College, I want to welcome you to this Institution, and especially to the Department of Dairying.

I consider it a special privilege to have this honor, for I think this organization will do more for the promotion of profitable agriculture and the increase of prosperity in Ohio than any other organization. We trust that this will eventually become one of the greatest organizations of this state.

We believe that dairying must ultimately become one of the chief branches of agriculture in Ohio. The old saying is, that "history repeats itself," and we can learn from countries that have passed through the various stages of agricultural development. Observe that some of the European countries, like Holland, Denmark, Sweden and Switzerland, as well as England and Germany, in which we understand there have been practiced different systems of agriculture for the last 700 years, have passed through all the different stages of evolution. The soil of these countries has been deprived of its fertility, and the people were obliged to resort to a system of agriculture by which the fertility could be restored. After trying all of the various methods of farming, they finally resorted to dairying. It has also been found by actual experience that the dairy business does not only increase the fertility, but it furnishes the cheapest food for mankind.

Ohio has been passing through some of these evolutionary stages in agriculture, and while there are many localities in which the soil is being depleted, you may be pleased to know that there are more localities in which dairying is being carried on extensively and the fertility of the soil restored. We hope that through the efforts of the members of this organization that Ohio lands can be completely redeemed by dairying, thus making the state more prosperous.

I remember well the sentiment that led to the organization of this association. I think we owe to Governor Hoard the formation of this organization, as the result of a lecture in favor of dairying which he delivered before the Board of Agriculture some fourteen years ago, in which he explained and illustrated the great role that dairying plays in keeping up the soil fertility. Thirteen men who listened to this excellent talk were of a receptive character and they organized and first launched this association. It grew rapidly the first few years, but after that there seemed to be a lull. I am sorry to say that the organization did not progress in numbers as much as one had a right to expect; but this is a fact, while it has not grown as much in numbers, it has grown most wonderfully in faith and hope.

I do not want to refer to our neighboring states, like New York, Illinois and Wisconsin, for the purpose of comparison, but I do want to call your attention to the fact that Ohio, with its 800,000 cows and furnishing to the large cities within its boundaries 70,000,000 gallons of milk per year and making 80,000,000 pounds of butter and 15,000,000 pounds of cheese each year, cannot afford to take a back seat in the further development of this work. With such a business and with such an enormous income, I feel that Ohio ought to have one of the best dairy associations on the American continent.

RESPONSE TO ADDRESS OF WELCOME.

BY PRES. J. D. NICHOLS.

LADIES AND GENTLEMEN:—In response to what Prof. Erf has said as to why the Ohio State Dairymen's Association has not grown as rapidly as we had a right to expect, I hardly believe I am able to give you a reason. It is too bad that it has not grown. It is too bad that we have not been able to work up enough enthusiasm among the producers of the dairy products to get them to join this Association, and then protect themselves against their own ignorance. I have attended several meetings of the Michigan State Dairy Association, and their membership is much larger than ours; their attendance is also larger than ours. The only reason I can see for this is that Michigan does not supply the amount of milk in its raw state for city consumption that we do.

Their supply of market milk is not really so large as ours. Their creameries are in operation the year around in the manufacture of butter and cheese, and their supplies are not drawn on for city consumption. The city of Pittsburg, with a million of people, draws at least 35 per cent. of her supplies from the state of Ohio. The city of Cincinnati, with her 500,000 people, draws her supplies largely from Ohio; and, I regret to say, largely from within the corporate limits of Cincinnati.

If the members of this Association could go down to Cincinnati and see the horrible conditions of their swill slop sheds, you would wonder that there are any babies living in Cincinnati.

Prof. Erf gave you some figures on the butter and cheese made in Ohio, but that only represents, to a large degree, the surplus milk, after the needs of the cities have been supplied. I doubt if there are many cheese factories and creameries in the state that are able to run for any considerable period of the year. The figures he gave you on butter and cheese represent that made from the surplus milk in the flush season of the year; in the spring of the year.

Prof. Erf said he wanted you to support a measure which would enable the State University to have meetings all over the state among the producers. In my judgment, you cannot do a wiser thing than to give such a measure your hearty support. Neither can you do a wiser thing than to go back home from this meeting and endeavor to work up enough enthusiasm among the producers around and about you to get them to join this Association. They should not only join this Association, but they should attend its meetings. I am sure if the dairymen of Ohio knew the value of these meetings, they would all be here. Not only should they attend their meetings, but you should get them to subscribe for publications treating on their business.

The reading of such publications would do them a great deal of good, and they would get many valuable suggestions in carrying on their work.

The Ohio State Dairymen's Association lost in the death of Prof. John Decker one of its staunchest supporters. In his death we lost a man who had done as much hard work for this association as any man could have done in the short space of time he was connected with us. He took a great interest, and his heart was always in the work for the betterment of the conditions of the dairymen of Ohio. While Prof. Decker is gone from us, his efforts to improve the dairy conditions in this state will live for years, and we trust that his successor, Prof. Erf, will be as successful in securing as large an acquaintance, and as universal a friendship among our people as did Prof. Decker. We trust that the work that was so well started by Prof. Decker and his associates will be continued by Prof. Erf and his associates. We trust that the dairy education already begun in this state may spread not only to the dairy sections, but to all sections of Ohio.

Personally, I would like to see this dairy scheme carried on all over the state. There are many dairymen doing things that seem right to them, but they are not doing the things that they should do. They do not know the proper method, and they do not understand, as they should, the laws of sanitation. They do not understand the work of dairying as thoroughly as they should. This is not only true in the producing districts, but it is equally true throughout the state.

In regard to the present agitation of the subject of tuberculosis, it is to be hoped that it will lead to a more thorough knowledge of the danger of contagion, and this knowledge should be preserved by many persons engaged in the dairy commerce. If many of the practices among dairymen are continued, it is very evident that in a short time the state government will take radical action. It stands us in hand to get all the information we can on this subject, to enable us to study it and to eradicate it from our herds. Our dairymen should assist in every way possible to prevent the spread of tuberculosis to their herds. A stormy effort should be made to prevent the increase of tuberculous animals.

I believe the best way to carry this information to our people is for the State University to have a sufficient fund for dairy education in the field. I believe the state should appropriate a sufficient sum of money which will enable Prof. Erf and his associates to have local meetings through all sections of the state.

According to the government reports, the income from the dairies of the United States is about 800 millions of dollars. When we realize that one-half the cows in the dairies are kept at an actual loss to their owners, we can see the necessity, as well as the possibility, of extending this dairy education throughout the state by local meetings.

If dairy schools can be carried on in the different sections of our state, I believe our people could double their production. I believe the hand-separator has been a source of large increase in profits to the producers. There should be a better knowledge of the methods of handling milk among our producers, and this knowledge can be obtained by a series of dairy schools conducted by the state. You must understand that if 99 dairymen in a community follow strictly sanitary principles, and the one hundredth man does not, his product brings the other 99 down to his level. There is not an industry in the land employing as many people as we employ that has not made more progress in handling and marketing their products.

There is not an industry in the land today, with the existing combinations, that could live if they did not use 20th century ideas, and if the dairymen of Ohio will wake up and get into the game, they can double the amount they are receiving today from their dairies. You people would not like to go back to the conditions existing forty years ago, when many of us were boys. We would not like to go back to the old cradle of boyhood days. I know your wives would not like to go back to the days of the old tallow candles. Yet if you drive through the country, you will find that 30 per cent. of the dairy stables are just as they were fifty years ago. Why is it? It is because we have not seen the new light.

But with the talent we have here in the State University, and under the guidance of Prof. Erf and Prof. Guthrie, if we can have some money set aside to educate the farmers we can increase wonderfully the profits of our dairy work.

I trust you will give this measure for extending dairy education in Ohio your warmest support. I thank you for your attention.

After the response to the address of welcome the convention was favored with a selection by the Williamson Sisters.

The secretary, E. S. Guthrie, then read his report which was adopted.

PRES. J. D. NICHOLS: I think it will be proper at this time to appoint some committees in order that they may have the necessary time to bring in their reports later on in the convention. I will appoint the following gentlemen on the

AUDITING COMMITTEE.

1. E. W. Hoyt, Columbus.
2. A. F. Neal, Macedonia.
3. Hiram Russell, Burton.

I will appoint the following gentlemen on the Committee on Resolutions with instructions to report before the close of the convention.

COMMITTEE ON RESOLUTIONS.

1. L. P. Bailey, Tacoma.
2. B. B. Herrick, Wellington.
3. O. F. Hudson, Ravenna.

PRES. J. D. NICHOLS: I want to bring another matter before this convention in regard to the election of officers. It has been the custom of the Association to appoint a nominating committee who would select and place in nomination the several officers. There seems to be a little doubt in the minds of some as to that being the fair way to do it. Of course, the members of the Association do not have to stand for the report of the nominating committee, but it is a delicate matter to object to it. I would like to get your sentiment on this matter.

PROF. GUTHRIE: I move that the officers for the ensuing year be nominated in open convention instead of being nominated by a special committee.

Seconded.

A. S. NEAL: I want to offer an amendment that the nomination be made in open convention and that the election of officers be by ballot.

Amendment accepted by Mr. Guthrie and thereupon the motion was adopted.

PRES. J. D. NICHOLS: Ladies and gentlemen, I am sure that it gives me the greatest pleasure to introduce to you as the first speaker this morning, our Dairy and Food Commissioner. He was with us for a short time last year, but as he had only been in office for a few hours he did not feel competent to take any positive stand on some matters pertaining to this department. He has now had a full year in the work and I am sure that he will be able to give us some valuable suggestions along our line, as well as to give us something in regard to the work of his office, so far as it relates to our interests. I take great pleasure in introducing to you Mr. Dunlap, our Dairy and Food Commissioner.

BY HON. RENICK W. DUNLAP.

Pure Food and Dairy Commissioner.

When I last appeared before your association as dairy and food commissioner the ink on my commission was hardly dry. At that time I had *some* conception of what was expected of an official in this position; however, the responsibilities, the difficulties incident to the enforcement of the laws assigned to this department by the legislature can only be learned by actual experience in the work. The past year has fully convinced me that this office is one of the most essential in the state. It is one in which every person in the state, and some out of it, should be deeply interested, for *all* consume food, some consume drugs and a large number eat, drink and take medicine.

Modern living in Ohio is largely and, in thousands of cases, entirely dependent upon prepared or canned foods, and this class of foods is more likely to be adulterated than any other.

This department is doing all it can, with the support it gets from the state, to prevent the sale of *adulterated* and *poisonous* foods, and also to prevent *deception* in the sale of food, drinks and drugs.

Each commissioner has his own ideas as to how this could best be accomplished. Some have thought it proper to prosecute every violation, whether it was technical, unintentional or otherwise; others have endeavored to point out mistakes producers and dispensers of food were making and seek to help them correct those mistakes without prosecuting, and prosecuting only when there was a wilful or intentional violation or where an article injurious to health was sold. The latter plan is the one adopted by the present administration. Please do not, however, misunderstand me and get the impression that few, if any, intentional or wilful violators are ever found, for enough were found since I last appeared before you to enrich the state treasury to the amount of approximately $12,000 when all fines are collected.

No doubt many of you have criticized the department for not doing more for the dairy interests of the state than has been done in the past. This criticism, on first thought, might seem just, but I believe, if you will stop long enough to consider what has been done and the facilities offered by the state in the way of laws and appropriations for doing this work, you may have a different opinion of the department. I will not take the time to go into detail, but I want to inform you of a few things the department has done along dairy lines the past year.

Upon assuming the office I found sufficient appropriation to hire eight food inspectors. These men are expected to cover the entire state and inspect *all* foods offered for sale. If you will stop just a moment to consider what that means, you cannot but conclude that this number of men could not possibly make a very close inspection. To make a thorough inspection, every grocery (wholesale and retail), packing house, meat shop, open market, hotel, restaurant, dairy, creamery, cheese factory and every other place where food is sold or offered for sale should be inspected several times each year; with this number of inspectors you can see it is utterly impossible. Not being able to inspect everything that should be inspected, the department has aimed to prevent the most serious and dangerous violations.

While the department has not done nearly as much for the dairy interests as it should do, and as I would like to have done, yet I feel that this industry has had its share, if not more of the time and attention of the department than it is entitled to when we consider the vast amount of work to be done in other lines.

Dairy products being a very important and almost indispensable part of the daily dietary of most persons, and especially milk for children and invalids, they *should* receive careful attention. Many of the city boards of health, the Ohio Dairy Association and the Dairy Department of the Ohio State University have co-operated with the department in its efforts to induce the producers of these products to place upon the market a more sanitary and nutritious food. While our efforts have aided very greatly in protecting the public, yet the department is not entirely satisfied with the scope of the work done, but I believe more will be accomplished the last year of the term than was the first.

Milk being one of the most widely used and one of the most easily contaminated as well as adulterated articles, the department naturally gives a great deal of attention to this valuable food product. Some of the cities, and a few villages, have good health ordinances, and have them well enforced. In these places there is very little to do. With these few exceptions, practically all of the people of the state depend on this department to protect them against fraud and adulteration.

During the year, 1,172 samples were secured and analyzed. Of these, 178 samples were found to be below the legal standard of 3 per cent. butter fat and 12 per cent. solids. While but a small per cent. of the samples taken were below standard, yet it is deemed necessary to secure a large number, for the reason that milk is so easily adulterated that some dealers would readily take advantage of the opportunity to make a few dollars should the department cease its vigilance.

Comparing the milk of the past year with that of former years, it is found that the quality is vastly improved. The use of preservatives has almost disappeared, only one sample being found thus treated, and this contained formaldehyde. The dealer was promptly arrested and fined.

A summary of the samples of milk taken follows:

Total number of samples tested for solids and fats......	717
Total number of samples tested for fats only............	455
Total	1,172
Average test for fat on all samples taken............	3.82%
Average test for solids on 717 samples................	12.66%
Total number of samples above standard..........	991
Average test for fat in samples above standard........	3.98%
Average test for solids in samples above standard....	13.02%

CREAM AND ICE CREAM.

There being no state standard for cream or ice cream, the department did not take many samples of either. However, all complaints of suspected harmful adulterations were investigated. A sufficient number of samples have been analyzed to show that a very large amount of these products now found upon the market do not comply with the standard required by the federal government. Under the state law, an article purporting to be cream, but containing less than three per cent. of butter fats (the requirement for milk) might be legally sold for cream, while the same product could not be legally sold for milk. Also an article could be legally sold for ice cream which contained no cream or even good milk. It is therefore earnestly recommended that the standards be established at once for both of these products.

CREAM.

Total number of samples tested	17
Average test for butter fat	22.6 %
Average test for solids	28.41%

ICE CREAM.

Number of samles taken	8
Number of samples containing dextrin and gelatin	6

OLEOMARGARINE.

The department has had more difficulty in the enforcement of the oleomargarine law than any other. Dealers, especially in the northern part of the state, insist and persist in selling colored oleomargarine, which is unlawful; and they also sell both colored and uncolored for butter, which is also a violation of the law.

Oleomargarine dealers who sell colored oleomargarine, or oleomargarine for butter, are not only violating the law and laying themselves liable for each sale made, but are at the same time injuring the sale of a legitimate product. *Oleomargarine is not a harmful or deleterious produce—in fact, when properly made, it is the reverse—and its manufacture and sale should be done in a legitimate way.* It is just as much of a deception and fraud to sell oleomargarine for butter as it is to sell ground chickory for coffee, or a mixture composed chiefly of beef stearin and cottonseed oil for lard. Because two articles look alike and in some respects answer the same purpose, is no reason why they should be sold indiscriminately one for the other. Oleomargarine is not butter, and butter is not oleomargarine.

The following is a summary of the samples secured in the open market:

BUTTER.

Number of samples taken	189
Number of samples proved to be colored oleomargarine	85
Number of samples proved to be pure butter	72
Number of samples proved to be renovated butter	3
Number of samples proved to be uncolored oleomargarine	23
Number of samples proved to be below standard	6

OLEOMARGARINE.

Number of samples taken	58
Number of samples uncolored	15
Number of samples colored	43

The courts have imposed about $7,000 in fines in one county alone for the illegal sale of this product.

CHEESE.

Very few samples of cheese were obtained. All examined complied with the law. More attention will be given this product the present year.

From the short experience as your dairy and food commissioner, I am fully convinced that there should be additional legislation on the following subjects:

First. There should be a law enacted preventing the entrance of diseased animals into the state. Some states have a quarantine law and those that do not have are the dumping ground for all diseased animals. Ohio has more than her share of these animals and the number is increasing yearly. I believe this association should urge the present legislature to enact stringent laws along this line.

Second. There should be a renovated or process butter law enacted. There is fully as much need for such a law as there is for the present oleomargarine law. The fact that thousands of pounds of this inferior article are being sold yearly for creamery butter is apparent to all of you. I find that a large amount of it is sold by fraudulent peddlers or dealers who canvass from house to house. Additional reasons for this law are well told by Commissioner Jones, of Illinois, and I will repeat it here:

"The unsuspecting housewife places an order with one of these fraudulent canvassers or peddlers for butter to be delivered in the future, and when the delivery is made it is found that instead of butter it is colored 'oleomargarine,' 'process' or 'renovated' butter, and when the good housewife investigates the matter she finds she has bought colored oleomargarine, process or renovated butter when she expected to purchase 'pure butter,' and paid the price for 'pure butter,' and that she has been defrauded out of about ten cents a pound by reason of same."

A casual examination of the wrapper in which the substance is delivered will disclose no marks by which it might be identified, but by an exceedingly careful examination it will be found that a fair percentage of the wrappers are marked "oleomargarine" in letters about three-eighths of an inch in heighth instead of three-fourths, as required by law, and in the dimmest possible manner. The ink used is generally about the same color as the wrapping paper and usually the paper is purposely wet where stamped, so that the stamp can be seen only when the paper has dried and then but dimly, the whole purpose being that the purchaser shall not discover the mark at all.

The wagon employed in the delivering of the "oleomargarine," "process" or "renovated" butter in question is seldom ever marked with the name of any dealer or any address showing his place of business; and on inquiring of the man where his place of business is located, his usual answer is some telephone number, but not an address.

After careful inquiry, we find that genuine butter is very seldom sold by the peddler in the house to house canvass method, it being well known that this method is a very expensive one, and with the wholesale price of butter at, say, 30 cents per pound, canvassers selling "genuine butter" would be asking 33 cents to 35 cents per pound, and consequently "genuine butter" is seldom, if ever, sold by the house to house peddler, and we warn the public against these house to house peddlers, so that they may be on their guard and not be deceived by having "oleomargarine" or some cheap "process" or "renovated" butter palmed off on them for "pure butter."

This department recognizes full well that "oleomargarine," "process" or "renovated" butter are legal articles of food when sold lawfully, and has no quarrel with any dealer in these substitutes for butter who observes the law and prepares and sells the article for what it is, but does propose to enforce existing laws against selling them (oleomargarine, process or renovated butter) for "pure butter."

In addition to the fraud perpetrated on the public by the packers and dealers in the sale of "oleomargarine," "process" or "renovated" butter for "pure creamery butter," whereby they are sold for the price far above the regular market value of oleomargarine, process or renovated butter, is the deception in the sale of process or renovated butter, whereby many persons, who would not buy process butter under any circumstances, if they knew it, are deceived in purchasing it.

While renovated or process butter is usually produced by melting butter that has become rancid and then rechurning the butter fat therefrom and thereby producing an article of food that is regarded wholesome and palatable, it is not generally known that large quantities of old, rancid butter, that has accumulated around produce houses and other places where such articles are kept and sold, and has been permitted to become unclean, is in the same manner melted and some "pure milk" or "cream" added and the fat therefrom rechurned and aerated by the chemical agency of air, thereby removing all *noticeable* impurities, and especially the rancid odor, and thus placed upon the market and sold in competition with "pure butter," hence, in order that the public may not be deceived, there should be a law requiring that it be truly and legally labeled "process" or "renovated" butter.

In order to determine the question as to whether the article is oleomargarine, process or renovated, or "pure butter," it is not generally necessary to have a **chemical analysis** of the article; a simple household test, which has been recognized for years, will pretty conclusively determine as to which it is. By this test it will be found that oleomargarine, process or renovated butter sputters like grease when heated in spoon or frying pan, and does not foam as butter does when heated in the same way."

Third. A law should be enacted requiring some state department to more thoroughly inspect from a sanitary standpoint, dairies, creameries and all other places where dairy and food products of every description are produced or handled in any manner.

My idea is for the dairy instructor or inspector to go to the creamery, cheese factory and all dairies supplying milk for any food purpose, and remain long enough to visit each factory and farm in the community and, if possible, arrange for meetings of the dairymen to discuss improved methods. Call attention to the dairyman that if he wishes to continue in the dairy business he must produce a good, wholesome milk, and to obtain this he must consider the health of his herd, the feeding of it, cleanliness in stables at all times, health of the attendant, water supply and the care of the milk from the time it is drawn until it is in the hands of the consumer. To be sure it would cost the state some money to furnish this information, but it would be money well spent. A dozen such men could, I believe, fully cover the state during the year. These men should be selected, not for their past services to any political party, but should be men thoroughly prepared not only from the scientific standpoint, but also from the standpoint of practical dairymen. You might say that such men are not obtainable. To be sure the *best* men are not, but I believe that satisfactory inspectors could be employed for one thousand dollars a year and expenses. If sufficient funds were available to teach the producers of dairy products the fundamental principles of this great industry, a purer and healthier product would certainly be obtained. Less suffering would result; for no doubt many diseases, such as typhoid fever, diphtheria, scarlet fever and often tuberculosis, are transmitted through milk by the careless handling of it. If the dairyman will not or cannot come to the school, take the school to him.

Fourth. I am sure it is very clear to everyone that there should be a legal standard established for cream in this state. At present a product containing less fat than milk can be legally sold for cream. Need of such legislation is apparent to all and it is not necessary to further discuss it at this time.

Fifth. While there is not at present a very great necessity for a standard for buttermilk, yet I find that an imitation is being placed upon the market, and no doubt, in the very near future, the large sale of a considerable amount of this artificial product will be made. Why not have a legal standard for this product *before* it is largely manufactured and thus make it easier to enforce the law, which we will sooner or later be compelled to enact in order to protect the legitimate product.

Sixth. There should be a standard for ice cream. Just what this standard should be I am not prepared to say. Any reasonable standard would be a great improvement over the present condition..

I find that today there is a frozen product being sold for ice cream which contains little or no butter fat, but a large amount of skim milk, gelatine, starch and other products.

Seventh. I have been considering for some time the advisability of proposing a law requiring milk sold in a retail way to be delivered in original package—that is, in bottles, cans or other receptacles. Experience of the past year shows that more trouble is caused in the sale of milk in a *few* cities of the state where it is sold from open cans than from *all* other milk sold in bottles. If the milk dealer does not carefully mix or stir the milk each time before dipping there is a chance for one customer to get much better milk than another.

There is also much more danger from contamination and spread of disease by handling milk in open cans or vessels. I am sure none of us would care to drink water handled as some milk is, yet there is much more danger of milk being contaminated than water.

My friends, is there any good objection to having a law requiring all milk, sold in a retail way, to be bottled before offering it for sale?

The practice in many instances of putting out an uncovered pitcher or other vessel for milk often many hours before the milk is delivered, and leaving many times after it is filled, thus exposing it to the sun, the dust and dirt of the street, whereby thousands of germs might collect before or after the milk is delivered, would be dispensed with. Many of these germs are dangerous to life and health; besides, they would certainly cause the milk to sour in a short time and become unfit for use. The purest milk received in such a way may become as bad in a few hours as the worst milk from a dirty dairy.

There should also be some provision to prevent the return of bottles or other vessels from a home or other places where there is a contagious disease until after the bottles or vessels have been thoroughly cleansed and disinfected. I firmly believe that much sickness could be prevented if this precaution was observed.

Eighth. The penalty for adding preservatives of any description to dairy products and for the selling of milk from cows known to be diseased should be raised. Everyone knows that adding preservatives to milk or any other dairy product and the use of milk from diseased animals is exceedingly dangerous to the consumer of such products, and the penalty should be much greater than it is at present.

Ninth. Inasmuch as there is more or less danger of the spread of tuberculosis among farm animals through the large amount of milk consumed by them, would it not be advisable to require the heating of all skim milk returned to the farmer from various creameries, to a sufficient temperature to kill the tubercular and most other disease germs before allowing the same to be removed from the creamery?

It is very apparent where milk is collected from so many different sources that it will very often contain some of the tubercular germs, and by the return of this milk to other farms the spread of the disease is certain. Some countries have this requirement, and I believe it would be well for your association to consider the advisability of such a practice in Ohio.

That this disease is dangerous and spreading must not be overlooked, and, in my opinion, it is high time that something was being done, not especially to cure animals that are now affected, but rather to prevent other animals from becoming diseased. At present very little, if anything, is being done to prevent the spread of this disease among animals or from animal to man. While many are not yet ready to admit that the disease can be transmitted from animal to man, nevertheless some of the best authorities on this subject maintain that it can be, and surely some very plain instances are recorded where cows with tubercular udders have given milk heavily laden with tubercular germs which have caused tuberculosis in the human.

In my opinion, if the state would appropriate more money for the prevention of disease, less would be required to care for the sick and unfortunate. It allows the feeding of tubercular milk and then spends thousands of dollars in erecting hospitals to cure tuberculosis. I do not want to appear unduly alarmed about this matter, but the circumstances and conditions are such that it should at least be fully investigated, and this association should not hesitate to support such a movement.

Many milk dealers believe that the safe way to handle milk is to pasteurize or sterilize it. The value of this treatment has certainly been overestimated. Bad milk cannot be made good by heating it. The heating process may often destroy the evidence of impurity so that it can be more readily sold. Pasteurization certainly does not improve good milk and I have my serious doubts whether it improves poor milk.

Dr. A. C. Cotton, of Chicago, who was a member of the committee on milk inspection appointed by the Children's Hospital Society of that city, has given the matter of the city's milk supply careful and serious consideration. As an authority on the diseases and care of infants, Dr. Cotton is well qualified to express an opinion. He says that we cannot aim too high in our efforts to secure a perfectly safe milk. When the public is educated up to what is being done to supply absolutely pure milk and will demand and use only milk that is safeguarded, there will be no place for poor milk and consequently, the demand will cease and with it the supply. "Nothing can take the place of perfectly pure milk," said Dr. Cotton. "I am strenuously opposed to the entire scheme of pasteurization, either by the dealers or by the public. It is a delusion and a snare. Pasteurization kills the bacteria, but does not destroy the poisonous effect; rather it increases the danger, for pasteurized milk, when allowed to stand, becomes a more prolific field for bacteria and makes a better culture bed for their growth. The food value of milk so treated is greatly impaired and it is rendered more difficult of digestion, while it destroys a certain activity necessary to make it both digestible and nutritive. It robs the milk of an essential element which we must term rawness. Babies were made to eat raw food, and become scorbutic when fed upon cooked food, developing a positive disease, known as infant scurvy. The disease is tractable, however, for the moment the diet is changed to raw food it yields and is easily cured."

No doubt milk was intended to be used in the raw state, and so far man has not improved its quality by any artificial means.

While we are urging and trying to educate the dairyman to produce a better product, we *must* at the same time educate the public to pay a better price for this superior article. The greatest obstacle in the way of the general use of pure and clean milk is the cost. Housewives have a peculiar idea of economy in regard to this. They will pay high prices for less important foodstuffs and try to economize on milk, the very article that should be perfect. They know that in every other kind of food they have to pay a higher price for a better article, but they seem to think that the only difference in milks is a difference in price.

Many who buy their hats in New York, spend their winters South and their summers North and can afford strawberries in February, object most seriously to paying two, three or five cents more per quart for good, pure milk.

Clean milk certainly ought to command a premium over dirty milk. With the average customer milk is looked upon as a necessity to be bought as cheaply as possible. When he is asked to pay a higher price he immediately characterizes it as robbery. The conditions of the country are not considered by the city consumer. The fact that the price of grain has been increased during the past ten years and that wages for farm labor are not only higher but very difficult to obtain, is lost sight of entirely. The consumer should know that it costs more to produce clean milk, and that it means extra care, and the dairyman cannot be expected to produce milk without a reasonable profit.

Members of the Dairy Association, you are in a position to very greatly aid in the betterment of dairy conditions in Ohio. While only a comparatively small number of the dairymen of the state are members of your organization, nevertheless, those who are members, I believe, are heartily in sympathy with any movement that will tend to the improvement of the products of the dairy. I believe you are willing to co-operate with any official or organization that is striving to elevate the dairy business to a more respected and profitable vocation.

I can assure you that the Dairy and Food Department is ready and willing to do all within its power to assist you in any movement that may be advanced for the upbuilding of this great industry.

PRES. J. D. NICHOLS: I want to call your attention to the banquet which is to be held at the Great Southern. We expect to have one of the largest and best banquets we have ever had, and we want you all there. You can secure your tickets from Mr. Guthrie.

I am very sure that we have listened with a great deal of pleasure to the address of our Dairy and Food Commissioner, Mr. Dunlap, and if you have any questions to ask him I am sure he will be glad to answer them. I have some objections to his telling you about the thin milk up in northern Ohio. We are close to Lake Erie and you might have your suspicions aroused. There is a good deal said about the sanitary conditions of milk, but I want to tell you that there is a great deal of carelessness among the consumers. A good many of them are very careless about the way in which the milk is kept, and then when the baby gets stomach trouble they say it is the milk. I never knew good cow's milk or cream to injure anybody.

W. G. REHL: I have listened with a great deal of interest to the paper of Mr. Dunlap. I think he has struck the right chord in his address. I am sure the farmer is in favor of furnishing good milk and milk that shall be free from all kinds of contamination.

MR. DUNLAP: I hope that none of you have misunderstood me in following the paper as I read it to you. There are some things that I emphasized that I think should be done. I do not mean that we should do away with the pasteurizing of milk, but I mean to say that there is not as much gained by pasteurizing as many people suppose. Some firms maintain that if you heat the milk that settles the question, no matter how dirty it was before being pasteurized. The only way to have good milk is to have it good when drawn from the cow and taken good care of until it reaches the consumer. As to whether milk should be sold in original packages or not, I do not express a definite opinion. We have more trouble and prosecution from people who sell in open cans than from all the rest put together. I believe it is because people do not get a fair sample. As I said, one sample of milk taken from a can may be better than another sample taken from the same can. I did not insist that all milk should be sold in original packages; but I think that is the only way to prevent milk from being sold in an unfair way.

PRES. J. D. NICHOLS: I want to say that the pasteurizing of milk does not cure all the evils of milk. I doubt if you can heat milk to a sufficient temperature without spoiling if for consumption. I believe that there should be more attention paid to the sanitation of stables. In many stables the sanitary arrangements are so bad you can not tell the color of the cows, let alone telling what kind of milk product you are getting. If you injure milk by outside influences you can not make it right by pasteurization.

PRES. J. D. NICHOLS: If there is no further business we will adjourn this morning's session. The secretary has an announcement to make.

MR. GUTHRIE: I want to say that this will be the only session held in this building. Tomorrow morning we will show the exhibits that have been brought here, and also invite you to inspect our dairy buildings and barns. We give up a portion of the afternoon today for the dedication exercises of the new buildings and barns which have been erected during the past year.

CLEVELAND, OHIO, February 10th, 1908.

MR. J. D. NICHOLS, *President Ohio Dairymen's Associaton.*

MY DEAR MR. NICHOLS:—It is with the utmost regret that I write to tell you that I am unable to attend the meeting of your association to be held this week in Columbus. I had hoped, until this morning, to be able to attend, but as you know I met with a severe and nearly fatal injury some weeks ago, and have been confined to the house ever since, and although much improved and feeling quite well, my physician positively forbids my making the attempt. Please express to the members of your association my sincere regret and assure them that I shall cheerfully join with you in any effort toward improving the conditions and advancing the dairy interests of the state.

Most sincerely,
C. W. Eddy, D. V. M.

Pres. J. D. Nichols: The association will now stand adjourned until 1:30 p. m.

PROCEEDINGS OF THE OHIO DAIRYMEN'S ASSOCIATION HELD AT THE OHIO STATE UNIVERSITY, WEDNESDAY AFTERNOON.

Wednesday Afternoon, 1:30 p. m.

Pres. J. D. Nichols: I regret to say that we have not heard from Prof. Smith. There is no doubt his address is ready and he is on his way, but has been delayed and has missed connections. In the absence of Prof. Smith I am going to call on a gentleman who needs no introduction to the Ohio Dairymen. I believe if there is any man who is able to speak intelligently on the dairy business that man is L. P. Bailey. You know that Bailey talks from the heart, and gives you the gospel of the cow. He tells you what he has learned in that school of hard knocks, and when Bailey tells you, you know it is true.

Mr. L. P. Bailey: The chairman has got me into trouble. When I was placed on this program I wrote the secretary that I would prepare nothing whatever, and hoped they would not ask me. When I found that Prof. Smith was to precede me I thought he could occupy all the time and thus relieve me of the responsibility of exposing myself. Again I had a letter from the secretary saying that as the dedicatory exercises would take place this afternoon we would only have a small portion of time. I felt relieved, because I wanted to hear Professor Smith—for when he talks he says something. I know that if I am to follow a man and I listen to his speech I do not say what I intend, so I concluded to write out what I had to say and read it to you.

I thought I could take an humble place in the audience and listen to Prof. Smith, but a few moments ago the president told me that Smith was not here and I would be expected to get up here and expose myself.

EQUIPMENT AND MANAGEMENT OF A DAIRY FARM.

BY L. P. BAILEY.

To intelligently discuss the management of a dairy farm and its equipment, we must first consider the adaptation of the soil and climate to food products, location as regards markets and class of products intended to produce. For milk or cream selling the farm must necessarily be located near the market, or near rapid transportation lines. For producing butter or cheese it may be located far from a public conveyance or market; in fact, the advantages on a farm for those purposes, remote from the market or public conveyage, may be more favorable than near, as land is much higher and help more expensive near a market and our leading transportation lines.

The equipment should consist of good stabling, such as can be kept at a temperature, in zero weather, above the freezing point, yet well ventilated; abundance of light, so that the direct, diffused or reflected sunlight may strike every part of it; pure air circulating everywhere. Stalls and fastening such as are comfortable to the cattle, convenient to clean and for the milkers. The ideal equipment may be quite inexpensive, so much so that with the shell of the stable furnished, anyone who can use a saw and hatchet, drive a nail; furnished with lumber, nails, paper and glass can easily do the rest.

The expense is so little, the result so great, that a dairy farmer cannot afford to omit any of those requirements, even on a rented farm at his own expense. The silo is an important adjunct to a dairy farm, though not wholly necessary to success; with well-cured alfalfa and clover hay, one can succeed almost as well as with the silage. My experience in raising food crops is limited to corn fodder, clover, alfalfa and timothy hay; for roughness, corn, oats and rye as concentrated, blue grass, clover, timothy, rye, pastures, sometimes supplemented with green corn. I have had no experience with oats and peas or soy beans as soiling crops. I aim to have silage left each spring to supplement the pasture, should they become short by drought or over-pasturing. I consider silage better for this purpose than the green corn cut and fed daily; the expense much less.

My belief is that the silo, filled with corn or other soiling crops, should supplant the soiling system of cutting green feed each day. The dairy farmer should consider the adaptation of his soil to the different soiling and grain crops. For my altitude and soil I consider the corn crop the most profitable and the foundation on which I must build, supplemented with oats; and for more nitrogenous foods to balance, I necessarily have to buy wheat bran, gluten feeds, cottonseed and oil meals and dried distillers' grains. Sowing rye, usually after the silage corn is taken off the land, gives pastures in the spring about one month earlier than our pasturing grasses, and is relished very much by the cow.

The rye largely on our hillsides prevents the soil from washing into gullies, and if not pastured when wet, it leaves the land in a better condition for another silage crop. I consider rye used in this way a valuable adjunct to a dairy farm.

The cows should be dairy cows, bred for this specific purpose. First, select udders well balanced, with an abundance of loose skin when dry, showing capacity, teats fair sized, not over-large nor under-small, placed wide apart. Second, dairy conformation, the reverse of the beef animal; just as easy to distinguish in the cow as the difference between the draft horse and the race horse. Third: stomach large, showing capacity to consume large quantities of food. With the above conditions intelligently established, success or failure depends almost wholly upon the proper management. Without this, failure is sure to follow.

Probably there is no other animal such a creature of habit as the cow, and none so much affected by any change from those established habits. Any change in the time of feeding, milking or milkers, her treatment either bad or good, affects both the quantity and quality of her milk. Her care should always be regular; it matters not so much about the time of feeding, watering and milking, if each is at the same time during the day. This is absolutely necessary for the best results. Each cow should be fed and cared for by the same person every day; he should study the individuality of each, her likes and dislikes, give her all she wants and needs, humor her as much as your grandmother used to humor you.

Watch the feed trough. If she is straining to get more, give her another handful; if she does not lick her trough clean and acts mincy, cut down her ration a little. Never strike a cow so as to hurt her; always treat her as you would a lady, and she will love you then, and do her very best for you; she will follow you around in the yard or field and moo a welcome to you every time you go into her presence.

Most markets will demand a regular supply of milk and its products all the year, and to hold the best trade and price you must meet this demand, hence cows should be bred to come fresh every month, except I would try to avoid July, August and September, on account of flies and hot weather. With the fly pest and hot weather it is very difficult, almost impossible, to get a full flow of milk; if in the early period of lactation the flow is allowed to diminish it cannot be very much increased later. Cows coming fresh in the fall, after fly time, will give more milk during the year than if fresh in the spring.

With good care during the winter, a cow fresh in the fall will give a good supply all winter and continue the same on grass until July, whereas a cow fresh in the spring will fall off in milk during fly time and it is impossible to get her back into a full flow, and she will only be a stripper all winter.

The dairy farmer should use only pure-bred sires, the very best the size of his herd and finances will justify; raise all the heifer calves out of good, gooder and goodest cows, allow the calf to take its feed from the dam for two or three days, then feed whole milk until about two weeks old, then gradually add skim milk. If the calf is healthy and worth raising at all, it will do well on skim milk alone at this age. At two or three weeks old, place in whole corn and oats before it, which it will soon learn to eat; also hay and silage. Keep it in a good, thrifty growing condition, but not fat.

I prefer the heifer to come fresh at about 30 months old. Milk for the market should be quickly cooled to 50 degrees or below, preferably run over a Star cooler. Place on the market as soon as possible, always in bright, clean vessels.

For butter, separate the cream while warm, cool down to 50 degrees or below, hold in place free from all bad odors until ready to ripen and churn. Put butter in clean packages wrapped in the best quality of parchment paper, everything neat, clean and attractive. Make all products as good, aim a little better, than anyone else. Get in the lead quick or quit.

The most successful dairy farm management is by the owner who must be intensely interested in its results. He must know that everything, even to the smallest detail, is done, and rightly done, at the right time.

His eye and mind must be trained so that he can tell by looking at the cow, the feed trough and weigh sheet whether she has received proper treatment or not. He must be the first in the stable in the morning, and the last to leave it at night. If he must rest, let him rest during some hour of the day when the cows are resting.

I know of no field of thought in the line of human activities so great possibly as that in the management of a dairy farm in its broadest sense, including animal breeding, development and care, and none so responsive in tangible results.

The field is open to every dairyman. Intelligent thought and action will bring results equally as well in the smallest as in the largest. In fact, dairying is a business that cannot be "trusted" as sugar and oil is "trusted." It is a business that belongs to the small farmer. All large aggregation of capital employment in dairying, after a greater or less number of years has failed, and I believe always will fail. The skill, system and care necessary to success in the dairy cannot be delegated to subordinates directed from a central office.

PRES. J. D. NICHOLS: We have a gentleman with us this afternoon that we all like to hear, and that is Mr. White. I take the liberty of calling on him for a few remarks.

MR. WHITE: Mr. Chairman, ladies and gentlemen, it is indeed a very great pleasure for me to be with you this afternoon, although I did not intend to take up any time in talking. I want to say that your president would not have said what he did if he had waited until I was done talking. I came here for the purpose of scoring butter with another gentleman from Cleveland. He has left the city and I will leave on the next train, so you will not have much chance at us.

I was intensely interested in the addresses that have been given. There are many problems to solve in the dairy work. In fact we are just starting out in the new way and it is still in its infancy. The greatest trouble is that we have been dairying in the way we have for the past hundred years, and we have not made much progress.

With progress must come changes, and the question with us is, how are we going to meet these changes? What are we going to do about it? Are we going to accept them, or are we going to fight them? There have been so many changes that we can scarcely realize where we are at in the present time. I am talking about the various lines of dairying. I have no particular subject assigned me. Riding through Ohio on the railroad, I wonder what this country was fifty years ago, seventy-five years ago. Perhaps some of these gentlemen with gray hair can tell us. They belonged in the early days when a large portion of the state was in timber. What did they do to convert these timber lands into fertile fields? Now comes a younger generation, and the question is, what are you going to do? It is up to you to improve the soil as much as your ancestors. You will have no small part to play. These old gentlemen took out the stumps and burned the brush, and it is up to you to improve the soil in order to keep it up. It can be improved, and that has been demonstrated by what we know of countries where dairying has been carried on for many years. The soil in this country is better today than it ever was. There is more production than ever due to the energy of man and the cow. I am not going to dwell on this subject. I have only a few minutes to talk and nothing in particular to say. My line of work is largely creamery work. I am trying to help the creamery men who are not doing as well as they should do to improve their conditions. We started out a year ago by sending out a number of blanks to be filled out and sent to the agricultural department. We were successful in getting a large number of reports. What did we find? We found that a majority of the creamery men did not know what they were doing. That is plain language, but it is true. They would receive milk and cream and churn it into butter. They would test the cream at the end of two weeks, or a month, and pay the patrons for the milk. They would set aside a certain portion of the proceeds as a sinking fund, but they did not know what they were doing. For instance, we found two creameries in the same neighborhood, and one was paying three cents a pound more than the other. The one creamery was getting market prices for butter and the other was getting two or three cents above the market price. This condition exists all over the country, and it should not exist. To make these conditions better simply means a little more care on the part of the butter makers. You must better understand what is required of you. The question is, how shall our butter makers get this necessary education? We found in some creamery butter nine per cent. of moisture; in other twenty per cent. There is no uniformity in this matter at all, and it is necessary to have an established standard for testing butter. This standard allows moisture up to sixteen per cent., and butter containing sixteen per cent. or more water is classed as adulterated, and the dealer is subject to a heavy penalty. Penalties paid last year amounted to hundreds of dollars. Some of the creameries far exceeded the limit, and others fell below it. That is all wrong. Creamery men must get down to business. You must know what you are doing. It is a comparatively easy thing to know. We have the Babcock tester to determine the per cent. of fat in the milk or cream. If that is operated carefully it gives accurate result.

What must the creamery man know to get out of the business all there is in it? He must know definitely the number of pounds of butter fat he receives. He must know what disposition is made of it. Suppose he ships his milk or cream, he must know the number of pounds of butter fat. We find in many cases it is a mixed business. Some ship milk and cream and make the balance into butter. He must know each day what it is. We get reports from creameries losing money every month because of not knowing what they are doing. The largest losses we find are in the skimming stations. Men are given complete charge of these stations, and there is no one to look after them. As a rule they are not competent to manipulate the machinery. The milk is separated and sent to the home plant and churned up without any regard to number of pounds of butter fat. Knowing that there is no uniformity, we have been working upon a system of simple records. The system is arranged in columns, and all you have to do is to put in the proper column the totals at the end of the month. I am pleased to say we have made some progress with this system. If we have done nothing more we have pointed out to the creamery men where they are losing and they soon find the trouble and correct it.

We have heard a good deal about the barns used by dairymen throughout the country. We find the barns in one community all of a certain type. It appears as if one energetic man built a barn and all the other people built one just like it. Many of the barns are defective in many ways. The greatest defects we find are light and ventilation. In nine-tenths of them there is not light enough to tell the color of the cow. That is all wrong. If we consider the value of light we will know what ought to be done in this direction. Wherever there is darkness and moisture, there is food for bacteria. I am not going to get into this bacteriological problem. I know there are differences in it, but bacteria are real and the question is how are you going to combat them? We depend upon an agricultural school and the board of health and other influences to correct these troubles. I have confidence enough in the American people that they are going to do it. I can see improvement, and as soon as they realize there is a necessity for these things they are going to keep up with the demands of the times.

I am very glad to have this opportunity to be with you. I might take a minute of time to speak in regard to the exhibit of butter. I had the privilege, with Mr. Burridge, to score the butter. The criticisms will be found in our report on the scoring card. The butter is not very different from what we find in other places. Some of it is good, some of it fair, and some of it not so good. The object of this exhibit is to point out the defects to the exhibitor. Many manufacturers make butter month after month without ever seeing any other butter than their own. These exhibits are intended to point out the defects and to suggest the remedies for the same. I see that my time has expired and I thank you for your attention.

INDIVIDUALITY OF THE COW.

BY PROF. C. D. SMITH.

[Address which Prof. Smith sent, as he could not be present.]

At the very outset I cannot refrain from publicly acknowledging my appreciation of the continued kindness and courtesy of the Association of Dairymen of this great state of Ohio. For half a dozen consecutive years it has been my privilege to preach the dairy gospel either at your stated annual meetings or near the homes of the farmers at special meetings called for that purpose by your honored president. I feel that I know the thinking dairymen of the state. I appreciate their kindness, and here and now express my appreciation.

Are the dairy interests of Ohio growing? Are the dairymen keeping pace with the demands for milk, cream and butter? Is the average intelligence notably higher now than ten years ago? Are the cows better, the methods for caring for them better? Is the general product superior, alike in quantity and quality, to the output of 1898? What has this association done in the fourteen years of its existence, and how have the farmers responded to its teachings and its work? What proportion of the farmers producing milk are now weighing daily, or even weekly, the messes of milk yielded by the individual cows? How many farmers are testing the cows of the herd; how many are building silos; how many are applying business principles to this most complex business?

I sometimes fear that those of us who speak at conventions of this kind bring into our addresses the academic spirit, appealing to the mind alone. In my opinion, the farmers of Ohio no longer need primarily education, but rather inspiration. Edison said that genius was largely a matter of perspiration. I sometimes fear that agricultural education, as far as its immediate practical effect upon the community is concerned, is very largely desperation. I repeat, that what we need now is not to know more, but to do more things we already know.

Take it in this very matter of the Individuality of the Dairy Cow, note the application of what we have just said. There is not a dairyman in the audience who does not yield mental acquiescence to the statement that two cows may look alike in practically every respect which appeals to the eye, yet one of them may make a record of 350 pounds of fat, while the other contents herself with 150 pounds in the year. In other words, you cannot tell by looking at two cows, which one to keep and which one to reject. How can you tell? There is no way other than weighing the milk and testing. It is useless to go into the matter farther. We all know this to be true. When we all live up to our knowledge in this respect, Ohio will become a paradise, a mecca to which good dairymen from regions will gravitate. What can I say then to encourage the Ohio dairymen to put into daily practice the things they know they ought to do? It is fortunate that we cannot revolutionize the world, but must content ourselves with very gradual evolution, the emphasis being on the gradual.

In the state of Michigan there have been organized cow testing associations and the number of these associations is increasing. The sole object of the banding together of the farmers in this capacity is to provide an economic method of weighing and testing the milk of each cow in the several herds, that any unprofitable members may be disposed of. The number of these unprofitable members revealed by the tests is surprisingly large, so the presence of exceptionally good cows is a matter of great surprise. The farmers are learning that they cannot look at their herd as a whole, but must study each individual separately and carefully.

I am not going to lessen the force of what ought to be said here by calling attention to the prodigies of any breed. The temptation is very strong to compare the performance of the Wisconsin Wonder to the common cow, but no benefit could accrue from such a study. The temptation is strong to refer to the experience in New York, where practical dairymen found it necessary to purchase over one hundred cows to get fifty or sixty good milkers, and where it was found necessary to keep up the selection year after year that the quality might be maintained and improved.

There is another phase of the individuality of the cow which, from the very necessities of the case, cannot receive the care which it ought. In all large herds the cows must be fed about alike, although with a little system it is possible for the feeder to recognize the difference in the behavior and performance of the individual cow. I know that in feeding sixty cows I easily kept in mind from day to day the relative performance and was able to gauge the feeding accordingly, giving to the cow making the greatest yield the largest amount of feed, and reducing the quantity to the individuals not responding properly. Too much carelessness characterizes the operations of the dairymen in this matter. Speaking of specific instances, the cow Rosa Bonheur Fifth, of considerable fame in the Holstein breed, gave an enormous yield of 2,989 pounds of milk in thirty days, or nearly 100 pounds per day. Her maximum ration at the height of the period was per day, 114 pounds of silage, 12 pounds of corn meal, 9 pounds of oats, 3 pounds of bran, 9 pounds of oil meal and 27 pound of roots. At the time, so abundant was her yield of fat that the butter was costing us less than 14 cents per pound, as far as feed was concerned. Naturally, this was a large individual, weighing 2,065 pounds. Naturally, too, she was in the hands of an expert feeder, who was able to recognize the slightest indication of anything going wrong. The yield of butter fat ran between 2.25 per cent. and 3.11 per cent. per day. This was true, notwithstanding the fact that the animal was kept housed in a loosely boarded box stall, the temperature outside being for the bulk of the time, down fairly close to zero. This cow gave the heaviest yield always in the morning, next at noon and the least at night. Her digesting and secreting machinery were kept in perfect running order. The regularity as to size and quality of yields was something significant.

Do not make the mistake of supposing that the milk tested the same in successive messes. For instance, on the third day of March the morning mess of 36.75 pounds tested but 2.2 per cent., while the noon mess tested 3 per cent., as did also the night mess. For a few days at that period the morning messes ran at 2.2 per cent., up to 2.4 per cent., while the noon messes ran always exactly at 3 per cent., and the night messes varied from 2.4 up to 3.3 per cent. The quantity seemed very much more uniform than the quality, and I have always wondered what the real explanation of this peculiar phenomenon was.

Notwithstanding the extreme care of the herdsmen, this cow refused to continue her great yield after a couple of months and rapidly dried up, giving in the whole year but 17,000 pounds of milk and 469.31 pounds of butter fat.

The digestible protein in her daily ration at the height of the performance was 6.30 pounds, the carbohydrates 31.34 pounds, and the digestible fat 2.34 pounds, all contained in 59 pounds of dry matter. Reducing this to the one thousand pound standard we had almost exactly 30 pounds of dry matter per one thousand pounds live weight.

By the side of this phenomenal cow there stood another one known to fame as Belle Sarcastic, who gave in one year 21,076 pounds of milk and 632.78 pounds of fat. She did not stop her milk yield, however, at the end of the year. In fact, after the close of the year she was making more than two pounds of butter per day, and in 16 months had given 827.22 pounds of fat. Her maximum daily yield was 82 pounds of milk and 2.45 pounds of fat. Her best week record was but 16.42 pounds of fat, but in the year she passed the big Rosa long before touching the home stretch. Not only that, at the close of her first period of sixteen months of this strenuous performance she calved, and in the next sixteen months produced over 800 pounds of fat, showing wonderful staying powers. Her ration at its maximum consisted of 12 pounds of roots, 48 pounds of silage, 51 pounds of hay, 7 pounds of corn, 3 pounds of oats, 8 pounds of bran. For the weekly period when she received the greatest amount of feed, she was given daily 3.58 pounds of protein, 19.90 pounds of digestible carbohydrates, 1.06 pounds of digestible fat per day.

I have cited the performance of these cows to illustrate that even among phenomenally good animals there is a wide variation, not only in individual performance, but in individual requirements as well. Rosa was passionately fond of silage and would eat little or no hay. Belle took roots in preference, and the wise herdsmen yielded to their tastes. Rosa went into the race with a hurrah and a rush and soon tired. Belle went at her manufacturing enterprise with coolness and deliberation and maintained her pace for over a year. All the details of the feeding and care of the two cows varied one from the other. Had we applied Rosa's feeding to Belle we should never have made the magnificent record that we did. Had we fed Rosa along the lines that we did Belle, she would never have been heard of. I am therefore bespeaking for our cows intelligent management, not a blind dependence on any imperative formula. I do believe the bulletins and other publications based upon the theory of the balanced ration are splendid guides to the man who already has the art of cow feeding at his finger tips, but as the sole guide to the inexperienced feeder they are a delusion and a snare.

The one theme I wish to present is the importance of weighing and testing the milk of each individual in the herd. It is an old theme, you have heard it over and over again, line upon line, precept upon precept. Are you doing it? Is your neighbor doing it?

Come with me into Michigan, go to one herd, then to the next. See this herd paying 50 dollars per cow per year clear profit, the next one paying nothing. What is the crucial difference? One herd has been selected, the other is made up with just such cows as may come along. With lack of selection has gone usually lack of care.

Some years ago, I was directed by the state board to buy a herd of cows, just such as I would pick up in riding through the country, that we might have the possibilities of ordinary cows. I did so and gathered thirty cows into the station barn. They were never thirsty, never hungry. At the end of the year we found that, on the average, they had yielded over 6,000 pounds of milk and over 300 pounds of butter, or at least fat enough to make over 300 pounds.

Professor Shaw repeated the experiment some years later and reached similar results. This does not disparage the idea of careful selection of the cows, but does show the importance of good feed and consistently good care. With selected herds our Michigan dairymen are winning as high as four hundred pounds of butter per cow per year. The upper limit has not yet been reached and will not be for a century ahead. We have not to learn something new, but to apply what we already know to give us the right impetus toward the goal.

Every man of us should devote himself to the work of instructing his neighbors by example and by precept the importance of the individuality of the cow.

The dedicatory exercises of the new barns took place in the University Chapel at 3:00 p. m., in the presence of a large audience. Dr. W. O. Thompson presided and opened the exercises as follows:

Ladies and Gentlemen:—This afternoon has been set apart in this place for some exercises in connection with the dedication of some new buildings recently erected for the College of Agriculture. Some of you have visited the buildings, and I trust you will all take advantage of this opportunity to visit them. These buildings have been constructed since the last session of the legislature. The buildings have been erected within the provisions made by the General Assembly, without scandal of any kind, and in the judgment of those who have carried the plans into execution, they are substantial buildings and will meet the purposes for which they were intended. The interest manifested in the course of agriculture, and the progress made during the eleven years, since the construction of Townshend Hall, is a matter of pride to us. When that building was constructed it was regarded as one of the finest agriclutural buildings in the United States. That may have been true then, but it is true that since that time there have been put into this country some elaborate and expensive buildings for agriculture. Some of our sister states have erected buildings that cost three times as much as that building, and yet we are proud of the fact in Ohio that while we have not spent much money, we have large facilities for the money expended.

We have invited you here this afternoon to see if you approve of the action of the board of trustees. These buildings have been constructed without discredit or deficit or scandal and we are proud of that fact. Ten years ago when Townshend Hall was built we thought we had done a great deal for agriculture. When we asked for these buildings some people thought we were expensive in our tastes. I think, however, the judgment of the trustees and the opinion of the faculty will justify the expenditure. We hope to present the subject of agriculture to our young men in such a way that it will lead to great development in the agricultural interests in Ohio. We have firm wisdom in the expenditure, because we have faith in the cause of agriculture. We trust that the instructions given in these buildings will promote every department of animal husbandry and live stock interests in the state of Ohio. I am pleased to see so many dairymen and live stock men present this afternoon. We are glad you are here and extend you a hearty welcome. We are glad to have you participate in these exercises with us. I take great pleasure in introducing Gov. Harris.

Gov. Harris:

Ladies and Gentlemen:—I was just thinking when Dr. Thompson was talking, how fortunate that fifty years ago there lived in one of the New England states a man who really thought out the importance of a college of education for the farmer. He thought of it and talked it over with his colleagues in Congress, but he received very little encouragement, because it was thought that the farmer needed more practice than education. They thought if the father was a good farmer the son would be a good farmer if he stuck to the business. I want to say that the farmers' sons have distinguished themselves in all the walks of life. The history of our country shows that many sons raised upon the farm have become noted statesmen and scientists. The man that I had reference to a while ago was none other than Senator Morrill. He knew something of the great West, something of the fertile fields and the great possibilities of this country. It was for the purpose of developing the West that he conceived the idea of educating the farmers along the line of their business. It was he who introduced a bill in 1859, after a hard struggle. It met with opposition in the House and still more opposition in the Senate, but finally, in February, 1859, he succeeded in getting the bill through. The bill proposed to give to each of the states in proportion to their representatives in Congress, 3,000 acres of unimproved land to be used for agricultural education. It was thought by many at the time that it was giving away lands of this country without getting value received. The question was raised, as often happens, that the bill was unconstitutional, and the result was that President Buchanan vetoed it. He tried it again in 1861, and at the same time a bill was introduced in the Senate by B. H. Wade. The result was the bill was passed and received the approval of President Lincoln July 2, 1862.

It is unnecessary to say anything to you as to the importance of agriculture, because I think it is the most important industry in this country. It produces more wealth in the finished product than any other industry in the United States. You may say that the manufactures of this country have piled up a wealth of 28 billions of dollars, but the manufacturer buys the raw material and sells the finished product, and therefore all this wealth must not be credited alone with the manufacturers. The farmer gets his wealth out of the soil. It is original production; not worked-over material produced by other interests. The millions added last year to our wealth were along the lines that Senator Morrill had in mind when he spent so much time in getting this bill through.

Ohio accepted that gift in 1864, and then one of our greatest mistakes was made; but it is easier to see wrong in looking backward than in looking forward. If our college land had only been held a short time longer you can see how much more we would have to the credit of the University. How important it would be to the University now, but the Legislature did the best they knew. The land was sold and the money turned into the treasury and became a part of the irreducible state debt. The state pays six per cent. on the money in the treasury. Of course, that is not all the state is doing or expects to do, because this university is an honor to the state and is willing to aid it as long as it sees the money well expended. Your graduates have gone out in the state and are leaders among the farmers for a better scientific knowledge of agricultural pursuits. I want to say there is no question but what the state of Ohio is ready to sustain this institution in all its reasonable demands. Of course, you might become so enthusiastic as to make too many demands, but I believe you can rest assured that the General Assembly will always deal fairly by the Ohio State University.

In 1890 the United States granted a permanent relief, and in 1891 the state of Ohio granted you permanent relief. In 1896, the state doubled the amount she had guaranteed in 1891 and she has continued to sustain this institution from that time to the present. When I point out what you have done I am sure that the Legislatures that have adjourned and gone do not feel that they have spent the money without value received. When this institution was organized there was a mere handful of instructors and students. What is the condition today? You have a corps of 175 instructors and a matriculation of 2,500 students.

This is certainly encouraging to the friends of the University. It is encouraging to the people of Ohio and encouraging to the Legislature, because they desire, when they make an appropriation, to get value received. This building we are in was then about the only building, and when you go out now and see the substantial buildings you are adding each year, it shows the rapid growth of this institution. The buildings we are dedicating this afternoon are along the line that Senator Morrill had in mind when he proposed to grant this land to each state to encourage agriculture. At first you had no graduates, now you have 2,500 graduates who have gone out and are adding honor to the University and credit to the state of Ohio. If a boy wants an education along the line of agriculture, he has the opportunity of a four years' course, which is complete. If he cannot spare that much time, he can take the two years' course. I am glad you have established a winter course, so that farmers engaged in their pursuit can come here and learn many things that are important in their daily work. Many problems can be worked out here, with the assistance of the apparatus and the professors, that will be very valuable to the farmers who come here for the winter course. We have great hopes for the University, and I feel we will not be disappointed. I congratulate you on having Prof. Hunt here to dedicate these buildings. As. Dr. Thompson said, I left my work this afternoon to come up and talk to you, and I feel well repaid to see so many here. I thank you for your attention.

O. E. BRADFUTE, MEMBER OF OHIO STATE UNIVERSITY BOARD OF TRUSTEES.

Ladies and Gentlemen: The office of trustee in a University like this is a very unique position. The trustee is sort of a bumper between the people and the Legislature. He is supposed to be in position to spend every dollar he gets wisely, and then if anybody thinks it is not spent wisely, he is the whole thing. When it comes to a matter of praise it is divided among the Legislature and other officials to which it properly belongs. I do not hesitate to say there is no industry in the United States greater than the live stock industry. There is in this country something like 205 million head of live stock, valued at the enormous sum of four and one-third billions of dollars. Even in the state of Ohio there are eight and one-half million head of live stock, valued at 200 million dollars. Is it any wonder that a great institution like this should want to be equipped for the proper training of young men in behalf of an industry so great as this? I am glad to say that so far as I know, no appropriation has been asked from the Legislature that has had more substantial backing from our people. On behalf of the board of trustees and the citizens of the state, I want to thank the members of the live stock and the other associations for your presence here today. I want to thank you for going to the Legislature and asking for this appropriation. It is gratifying to invite you to visit and inspect these buildings and see if the trustees have done their work well. It has been my good fortune to visit most of the prominent agricultural colleges of the central states, and I am glad to say that the new buildings in completeness and arrangement excel any that I have seen in America. I think it is proper that Ohio should take the lead in live stock education. It is simply a question whether the buildings are worth the cost. I want to say to these young men that these buildings have been completed for you, and it is for you to show that you are worthy of such an expenditure of money. It is for you to show that after your training here, you will go out and become leaders among our fellow men in this state. There was a motto at the head of a farmers' paper some years ago: "There is nothing too good for the farmer and his family." I want it to read, "There is nothing too good for the farmer in his education." I further want to say to the older farmers here that you may think they are not barns, such as you can have, but educational buildings. While that is true, we trust that the student trained here will carry out in details the plans in the construction of his own buildings. When these young men have done that they will raise the standard of the live stock industry in the state. The farmer cannot afford simply to grow live stock, but he must be able to grow the best live stock to be found anywhere. If you enter into competition with other states you must grow live stock that are as nearly perfect as it is possible to make them. It is to this institution and to the training of these young men here that we must look for this result. If the training received here adds but one cent a head to the eight and one-half million head of live stock in the state, it will more than pay for the $80,000 invested in these buildings.

THE RELATION OF DOMESTIC ANIMALS TO HUMAN PROGRESS.

BY THOMAS F. HUNT.

Dean of the School of Agriculture of Pennsylvania State College and Director of the Agricultural Experiment Station.

If you will go with me up High Street to the Delaware County line and will then walk westward with me to the Olentangy River, you will find other evidences of a former race of people than that indicated by these good Indian names—Delaware and Olentangy. Here may be seen a large circular embankment which, in connection with a bend in the river, encloses several acres of land. The high bluff which here constitutes the bend on the river suggests the use to which this enclosure may have been put, especially as no other vantage ground exists for miles around. The large embankment several feet in height and width, now entirely overgrown with timber, certainly required a larger amount of labor. My next door neighbor, who, on the occasion of my visit to this former fortification was my companion, is a building contractor and appreciates the amount of work required to move a small amount of earth. His natural remark was that it would take a great deal of labor with teams and scrapers to make such an embankment. The equally natural reply was that the people who made this embankment did not have teams, much less scrapers, with which to do the work.

These North American Indians built their fortifications, as well as their mounds, without draft animals or beasts of burden.

While the Indian was not lacking in native ability, or even a considerable degree of inteligence, it may be confidently asserted that he never would under such conditions have developed beyond the stage of barbarism. It has been estimated, by what appears to be reasonably competent authority, that when America was discovered that the present continental territory of the United States did not contain a population greater than that of Cleveland. It was all the population that this great domain would support with the agencies at their command.

Because there were on the American continent no domestic animal save the dog and the comparatively inefficient llyama and alpaca, the peoples of America failed to develop as did those of the old world.

Domestic animals were a prime requisite to civilization. Man has developed just as rapidly as he has been able to subjugate the forces of nature to his own use. Working alone and unaided he would have a sorry existence. By the aid of domestic animals he has been able to increase his productive power. The influence of the efficient use of animal power on man's earning capacity may be easily illustrated. The average monthly wage of a farm hand in South

Carolina was, in a recent year, $13; in Oregon it was $32. In Oregon it is customary to drive six horses to a plow or harrow, nine are sometimes used; in South Carolina the common motive power is one mule. The Oregon workman receives higher wages because he earns more.

I recently travelled from Freeport to Rockford, Illinois, a distance of 30 miles. From the car window I counted the teams working on the land (not including teams hitched to wagons). Two were two-horse teams; 18 were three-horse teams and four were four-horse teams. The two two-horse teams were near the city of Rockford, and were doubtless on a market garden. The use of three 1,500 pound horses by the farmers of Illinois in place of two 1,000 pound horses by the New York farmer has a greater influence on the respective prices of land than does the supposed relative productivity, which, in many cases, does not exist.

Formerly, transportation that was not by boat was largely upon the backs of animals, the draft animal being chiefly used at the plow. Since the moving of commodities has come to be done largely on wheels, and since coal, oil and gas have been applied to the moving of wheeled vehicles, the use of animals as a motive power has declined relatively. It seems probable that a large application of the force of falling water through electric transmission is soon to cause a still greater use of mechanical motive power. Notwithstanding, however, the tremendous improvements in transportation by mechanical motors which took place during the last half of the nineteenth century in the United States, the number of horses in proportion to population has somewhat increased. This is more significant in view of the fact that so much larger a proportion of the population now live in cities. In 1850 there were in the United States 4.8 persons for each horse or mule, while in 1900 there were but 3.8 persons for each such draft animal. The fact that horses continue in as large numbers as ever relative to population is due to a well-known attribute of human progress. The activities of man increase with his ability and his opportunities. A number of instances have been reported where better and cheaper parallel transportation has been provided without reducing materially the transportation on the original road. The better and cheaper facilities not only cause more people to travel, but also the same people to travel more often. Every invention which enables mechanical power to supplant animal power is a distinct advantage to society. The great advancement in material wealth in recent times has been due largely to the increased application of the stored up carbon obtained from coal, oil and gas to the world's work. It is not probable, however, that these improved methods will supplant animal power. They will merely augment man's resources.

Animals have enabled man to conquer nature, not only by adding their force to his relatively weak body, but they have furnished him clothing which has made it possible for him to extend his habitat. The extensive cultivation of cotton which came about in the nineteenth century, has made wool and silk relatively less important, but it may be doubtful whether the demand for leather was ever greater than during the past decade. In this age of substitutions, there have been few attempts to supplant leather. Although relatively less extensively used than formerly, silk and wool possess quality found in no other fibre. Flax has suffered more than silk and wool from the competition of cotton. The influence of clothing, and especially cotton cloth, upon the externals was impressed upon me some years ago when I used to try, in my feeble way, to represent this institution before the farmers of Ohio. I was attending a farmers' institute on the Western Reserve. The comparatively small room was filled almost to suffocation. On the front seat sat a wiry, lean, lank man, with a long, gray beard. I was lecturing on the feeding of animals, and after explaining the difference between the composition of a plant and an animal in chemical terms, I concluded to make a comparison upon the supposed level of my audience, which I have long ago learned is an unwise thing to do. I said: "Now the difference between a potato and myself is that a potato is most all starch and I contain none." As quick as a flash the old man on the front seat exploded: "Humph, the starch is all on the outside."

Much the larger part of vegetation which grows upon the earth's surface is unsuited for human consumption. According to the United States census, in 1900 only 12 per cent. of the land in this country was cultivated in any other crop than grass. Therefore, 88 per cent. of the land area was either wood land, grass land, waste land or building sites. Of the 12 per cent. in farm and garden crop, other than grass, 10 per cent. was in cereals. A large part of cereal grains and portions of the straw are converted into milk, butter, cheese, meat or animal fat. As an example, over 80 per cent. of all the corn raised in the United States is consumed in the county in which it is raised, a large part of this being fed locally to domestic animals.

Not only do animals add to the quantity of available food, but it must be admitted that their flesh and other products have added greatly to the quality of man's dietary. Among all the products of man, none are more efficient or more refined than dairy and poultry products.

The domestication of animals has also added to human progress by increasing the stability of the food supply. Like grain elevators in primary market, domestic animals are storehouses of food to be called upon when soil products are temporarily limited and allowed to accumulate gradually when the soil again produces abundantly. A nation in which a considerable part of its food supply is stored in meat-giving animals seldom suffers from famine.

While domestic animals have occupied such an important role in advancing the material welfare of the human race, they have been no less important to our spiritual welfare. Whether animals are kept merely as companions (pets) or as slaves (for labor, clothing or food), they compel habits of care and responsibility and inculcate habits of mercy. Such habits are essential to the highest success in the rearing of dumb animals. These habits, together with the sympathetic influences involved, have in all ages and still continue to have an elevating and civilizing influence. The late Prof. N. S. Shaler, who, like Dr. Orton, was one of the great philosophical students of nature, puts it thus:

"It is perhaps too much to attribute the advance of the agricultural classes of our civilized peoples, in all that serves to remove them from the brutality of their savage ancestors, altogether to the nature of their work—to the very large element of kindly care for which it calls—and which is the cause of success in the occupation. Yet, when we note the immediate way in which the people bred in cities, under circumstances of excitement are wont to behave like savages of the lower kind, showing in their conduct a lack of all sympathetic education, and contrast their behavior with that of their kinsman from the fields, we see essential differences in character which cannot well be explained save by the diverse natures of the training which the men have received. Thus, in the French Revolution, the baser, more inhuman deeds were not permitted by the peasants who had been the principal sufferers under the regime which was overthrown, but by the people of the great towns, who had been less oppressed by the iniquities of the old system of government.

"If it be true—as my personal experiences and observations lead me firmly to believe is the case—that man's contact with the domesticated animals has been and is ever to be one of the most effective means whereby his sympathetic, his civilized motives may be broadened and affirmed, there is clearly reason for giving to this side of life a larger share of attention than it has received."

It is a matter of some significance that these handsome residences for cattle and horses, and the well equipped and finely appointed laboratory for instruction in domestic animals, all confessedly the finest of their kind in America, should be located in an eastern state like Ohio. Just as it is a matter of some significance that in one county in the state, which the speaker who has just preceded me has the honor to represent, there are more different breeds of domestic animals than in any other county in the world. I am well aware that a large measure of credit for these splendid structures is due to the ability and pertinacity of the head of your Department of Animal Husbandry, Charles Sumner Plumb. I will be pardoned, however, I feel sure, if I call attention to the deeper significance attached to the assumption on the part of the state of Ohio in making adequate provision for the development of domestic animals by the means of public funds.

In 1805, George Renick, of Ross County, crossed the Allegheny with 68 head of fat beeves and drove them into Baltimore in good condition, where they were sold at a profit. Thus began a competition between the eastern and the then far western farmer, which has gone on year after year in an ever changing theatre. In 1825, the National road was completed into Ohio. In quick succession followed the canal, railroad and steamboat navigation. These facilities enabled the farmers of Ohio, Kentucky, Indiana and Illinois, blessed with cheap land and a young and vigorous population, to market their crops at great economic advantage compared with the farmers east of the Alleghenies. These were days of great prosperity for the farmers of the Ohio Valley.

But with the close of the Civil War new forces arose. Population had begun to flow over the Mississippi into the middle third of the United States. In 1869 began the consolidation of railroads into transcontinental lines, and into this vast and treeless plain which lay ready for the plow the iron horse pushed its way, sometimes following and sometimes preceding the onflow of humanity. Further east the states had, for the most part, been covered with stately forests. In these almost impenetrable forests the ax-man hewed his way tree by tree, but in the middle west lay a vast and a treeless plain upon which thousands and tens of thousands of cattle and sheep could be pastured without cost of land, and the pioneer had to but turn the furrow to convert it into a garden.

By 1850, the mower; by 1860, the reaper; and by 1880, the self-binding harvester made possible a development of the middle west the like of which the world had never before seen. With the occupancy of this country came millions of bushels of corn and oats, which, before they had any value, had to be turned into animal products.

Some notion of the gigantic character of this enterprise may be had when we remember that in the last thirty years of the last century we doubled our farm area, doubled our agricultural productions and doubled our population. This means that the people of the United States subdued to the uses of man in thirty years as much of nature as they had been able to do in their previous history of two hundred and fifty years since the landing at Plymouth. Almost as by magic the middle west was changed from a wilderness to a prosperous, happy and contented community of many millions of people. This came about so quickly that it is not surprising that its full significance upon the development of the country as a whole had not been altogether comprehended.

There is no time to sketch the development of the western third of the United States. Twenty-five years ago, a Jew peddler walked into Deadwood, Dakota, with a pack upon his back. Twenty years later, he had twenty thousand steers for which he was asking $50 a head, or a total of one million dollars. This several times millionaire did not succeed as a cattleman because that country is especially a grass country, since it takes from ten to twenty-five acres to support a steer, but because he could pasture animals free on government land. For a century the western two-thirds of the United States has been a live stock country, not because it is peculiarly adapted by nature to the rearing of domestic animals, but because it was a pioneer country. That portion of the United States east of the Mississippi and north of the Ohio and Potomac is adapted to raising two things, trees and grass, and all agricultural industry, based upon trees and grass, such as horticulture and animal husbandry, must flourish in this section when the country begins to develop internally. This splendid group of new buildings is only one of the evidences of the beginning of such internal development.

Year before last, at Cornell University, 47 tons of hay were raised from 12 acres of land. Last year, at the Pennsylvania State College, 26 loads of timothy hay were taken from six measured acres. Not all the loads were weighed, but some were, and each load that was weighed weighed over a ton. A portion of the field was measured and the weight on this measured portion indicated a yield of five tons and one hundred and eighty-nine pounds per acre. These yields of hay were not produced by science. They were due to the use of common sense, the keeping of domestic animals and climate adapted to the raising of grass.

It is curious that we should not have discovered sooner that it takes several generations of occupancy before a country becomes truly productive. Of course, I am not referring to the first decade, during which the pioneer removes the so-called virgin fertility.

Prof. Thorold G. Rogers, of Cambridge, spent forty years of his life studying the agricultural productions of England during the centuries which have elapsed since the Roman invasion. He gives it as his deliberate opinion, based upon the reports of bailiffs, that the average yield of wheat in the fourteenth and fifteenth centuries was six bushels per acre. It is now thirty bushels per acre. It is the same soil, the same rains fall and the same sun shines upon it, but the communal system has given way to enclosures and the consequent development of live stock husbandry. The plains of Gaul have raised wheat continuously since the days of Caesar, and the yield per acre today is about twice that of the United States. The average yield of wheat in Pennsylvania during the past decade was seventeen bushels per acre. During the same period at Pennsylvania Agricultural Station the average of all varieties raised, good, bad and indifferent, during the same period, under a system of animal husbandry, has been thirty-two bushels per acre.

Writing centuries ago, DeHenley said: "The feet of the sheep turn the sands into gold." Prothero more recently said: "Farming in a circle, unlike logic, is a productive process."

If the Ohio State University was in the habit, as is the habit of some institutions of learning, of placing suitable inscriptions on the outside of its buildings, I would propose placing over the portals of the live stock pavilion the old Flemish proverb, which, after centuries of progress and of scientific endeavor, is as true and as significant today as the day it was penned. It consists of only five different words and is as follows:

"No grass, no cattle; no cattle, no manure; no manure, no crops."

ILLUSTRATED LECTURE FOR THE OHIO DAIRYMEN'S ASSOCIATION HELD AT THE BOARD OF TRADE, WEDNESDAY EVENING.

Wednesday Evening.

A large crowd assembled at the Board of Trade to listen to the lecture of C. B. Lane.

Just before Prof. Lane's lecture the Williamson Sisters Quartette gave two selections, and Mr. Wm. Taber, student of Ohio State University and ventriloquist, entertained the audience very originally.

This lecture was illustrated by stereopticon views and was not only very interesting, but highly instructive. Many questions were asked and many hints were given to the farmers, which will enable them to place a better and purer supply of milk upon the market. The large audience enjoyed the lecture very much, and derived much benefit from it.

ILLUSTRATED LECTURE ON MARKET MILK.

BY C. B. LANE.

Assistant Chief United States Dairy Division.

There is perhaps no more interesting problem nor one more important in the dairy world, than the supply of pure milk, and there is scarcely a food product of any importance that has been more neglected than milk. Considering its universal use, its great food value and the dangers connected with its production it should be safeguarded with the greatest care. As a matter of fact, the dairy business has been largely built up in the past on a "cheap basis." Cheap cows, cheap feed, cheap stables, cheap labor and cheap prices for the product. There is no argument for the low price which has prevailed for milk during the past twenty years, when we compare the price of milk with that of other perishable human foods. In other words, if the dairyman could sell the nutrients in his milk for the same price per pound as the meat man receives for the nutrients in his meat, or the poultry man for his eggs, he would soon be a rich man. But for some reason the consumer has usually protested against any raise in the price of milk, and yet he will pay any price the market demands for beef or other commodities, whether high or low.

PRESENT CONDITION DUE TO EDUCATION AND CUSTOM.

Education and custom have fixed this low price for milk and education and custom must change it. Already there is a great change going on in this respect and the consumer is beginning to discriminate between milk flavored with the cow stable and clean milk—and is ready to pay the difference. The price of milk to the consumer has advanced to nine, and in some cases to twelve cents, in some of our cities. Partly because of the increased price of feed and labor, it is true, but it is also due in part to the more stringent regulations in those cities.

For example, a number of cities are requiring that the cows shall be tuberculin-tested, that the milk shall be delivered at the temperature of 50 degrees Fahrenheit and that the dairy shall score at least 50 points on a scale of 100 for perfect.

Again, one of the largest companies operating creameries and buying milk in the upper part of New York state has added the following note to their published list of prices for the coming three months: "These prices apply only to those dairymen whose places have been scored 60 per cent. or more by the inspector of the department of health of the city of New York. There will be a reduction in these prices for those dairymen scoring less than 60 per cent., and the product of any dairy scoring less than 50 per cent. is not desired and will not be accepted."

As a result, therefore, the price of milk in New York City has advanced to nine cents, Boston nine cents, Baltimore nine cents, Washington nine cents, Norfolk ten cents, Pittsburg ten cents, and we could add many more to this list. Someone has said that "in supplying milk at eight cents per quart, the honest milk dealer is facing bankruptcy and the milk consuming public is dwelling in a fool's paradise."

Education is the greatest factor in putting the milk business where it belongs. It has been at work more or less in the past few years and it will much more foster in the future. There never was a time when city health officers and state and government officials have been so active in the improvement of the milk supply as today. Our Dairy Division has given assistance to about 100 cities during the past year in improving their milk supply, and most of them have made direct application for this assistance, showing that the leaven is working, and while all this will tend to bring the conditions on the farms up to a higher level and require greater vigilance on the part of the dairyman, in the end it will mean better prices and a better market and be to his advantage.

It is true that a good many dairymen will have to change their present standards for milk. They do not understand why it is that conditions and methods that have been approved for the past 25 years should suddenly be condemned—milk inspectors, therefore, should be careful to explain the new order of things and the importance of better sanitary conditions, and give the dairymen a fair chance to meet the new demands made upon them. As someone has said, however, the conversion of some men's souls can only be brought about by prosecuting or debarring from the markets. But the dairymen, like the commercial business man, is after the dollar, and to get it he must use good business methods. He no longer uses the candle for light or wood for heat or walks a mile to talk with someone about a business matter when he can use the telephone. What these things are to the city business man, the well lighted, well ventilated and sanitary cow stable, the cooler and proper utensils are to the dairyman. They are necessary to prosperity in either case. The result will be that the up-to-date dairyman will be able to meet the demand for cleaner milk at a better price, while the dairyman who continues to follow the old methods will continue to get the old price or go out of business.

DAIRYMEN FALLING IN LINE.

I have great faith in the dairymen who are making an honest effort to produce clean milk. It is very gratifying to find so many patriotic and public-spirited men in the dairy business anxious, not alone for the money which their business yields, but desirous also of aiding the departments of health and other organizations to secure a supply of wholesome milk. In this way they are doing what they can toward the protection of the lives and health of the people in our cities who are dependent on the dairy farmer, daily, for a supply of milk.

The following letters illustrate very clearly the favorable attitude of many dairymen toward the milk question and the great campaign for pure milk which is now going on in many cities:

"Dear Sir: It gives me great pleasure to meet your dairy inspector. He called at our farm and thoroughly scored our dairy, giving us 75 per cent., and showing or pointing out to us where we might score 100 per cent., with a few improvements; this fact we appreciate very much. I am just writing these few lines to show our appreciation of the valuable work that you are accomplishing for the benefit of the public health as well as the welfare of the dairymen at large. The visit of the inspector did me a world of good pointing out our defects in the dairy.

"Wishing your department the hearty co-operation of all the dairymen, I am
Sincerely yours,"
(Signed) Manager for............

"Dear Sir: I want to thank you personally for your visit to our farm this week. It has inspired me with renewed life and vigor. I shall not wait until the new year to make new resolves and promises, but begin right now. I know I shall never reach my own ideals even, but I have made up my mind to try. No matter what the motive is in the Department of Agriculture in sending out such inspectors, it cannot fail, in my judgment, to do immense good.

"I want you to come around next year again, and if I am not entitled to be marked up at least 20 points, I will promise you to go out of the business, and I ought to.
Very truly yours,"
(Signed) ....

These letters, mind you, were not solicited, and are the free expression of the dairyman himself.

Successful dairying does not depend upon expensive equipment. Even the most modest equipment coupled with *proper* methods have brought success to a large army of dairymen and good profits. Other dairymen with the same opportunities have failed to reap a profit, not because the business is unprofitable, but rather because of faulty methods—this may be said also of almost any business.

The dairyman who is practicing present-day methods understands something of the science affecting his business—the effect of bacterial action—and his work is no longer uncertain and monotonous, but he finds it interesting, instructive and profitable.

UNFAIR COMPETITION AN OBSTACLE TO BETTER MILK.

Up to the present time, clean milk and dirty milk, milk rich in fat and milk poor in fat, has been selling in our cities for practically the same price. In fact, consumers have been very slow in discriminating between these different grades of milk. While they looked upon milk as a necessary article of food, to be purchased as cheaply as possible regardless of quality or source of supply, if milk had a fair amount of cream and uniform flavor, no questions were asked. Thus, there has been but little incentive for the dairyman who honestly tried to supply a better quality of milk, to continue to do so. In fact, the milk dealer who attempted to increase the price has been boycotted by the housekeeper and told that milk could be purchased cheaper somewhere else. We have come to look upon milk now, however, from a different standpoint and to consider not only its content of fat and solids, but the dirt contained in it and the number of bacteria. The dairyman who persists in producing milk under unsanitary conditions is arrested and fined for selling dirty milk in some of our cities as quickly as the dairyman who sells milk below the standard for fats and solids. The dairyman also has to be careful in his methods and see to it that the bacterial contamination does not exceed a certain limit when the product is delivered in the city.

All this tends to fairness and equal competition and puts every dairyman on the same basis. While in the past it was possible for the dairyman with a place about as filthy and as bad as could be imagined, lacking in everything that it should have, to secure as much for his milk as a dairyman whose place was clean and sanitary and wholesome in practically every respect. There was no incentive to produce better milk under these circumstances. In the future the dairyman who has not a true idea of dairying will gradually be crowded out of the business. And dairying will become more scientific and more businesslike, employing only skilled and educated labor, dealing with profitable cows, and taking pride and interest in his work. The dairyman of the future will realize more fully that the milk prepared in his cow stable is a food product and that the surroundings should be as clean as the place where his bread is made or the potatoes are peeled.

RESPONSIBILITY OF THE HEALTH OFFICER.

Laws must always be in force for the wilful law-breaker, the careless and the ignorant—and the public should have a right to protect itself from disease or any impure product. Some of our city health departments have perhaps been a little too radical and have not always met the producer half-way. The health officer should have patience and should endeavor to point out to the dairyman his faults and give him a fair chance to improve before condemning him. Co-operating is a good deal better than clubbing. Of course, it is understood that the persistently dirty dairyman must be dealt with by a firm hand, but the point I want to emphasize is that the majority of dairymen are not wilfully dirty and that they are willing to do anything reasonable. But they need to be condemned less and assisted and instructed and encouraged more. If the inspector could be looked upon as an instructor rather than an official inspector on police duty, many of the difficulties between health boards and dairymen would disappear. Such instruction should be given right at the dairy farm, with the dairymen on the spot, and it should be given by capable and practical men. The dairyman has often had good reason for objecting to inspection—for example, an inspection force was appointed in a western city recently which consisted of an *engineer*, a *detective*, a *solicitor*, a *machinist* and an *ex-policeman*—a good example of what poor politics is doing in some of our large cities.

The education of the consumer is practically as important as the education of the producer, and until they learn to appreciate clean milk and are ready to pay a reasonable price for it, just so long are they encouraging uncleanliness, the keeping of diseased cows and the watering and doping of the product. The consumer is therefore fully as much to blame for the present quality of milk as the producer. There is need of improvement all along the line. The boards of health must employ competent inspectors to instruct and bring about better conditions on the dairy farms. The dairymen must appreciate more than they have in the past the great importance of producing clean milk, free from disease and contamination, and the public must be educated to demand clean milk from clean dairies and foot the bills for this improvement. We need better milk and if the dairymen make it good, they can never make enough.

THURSDAY FORENOON.

The entire forenoon was spent in studying the up-to-date dairy machinery and utensils; and in the dairy school laboratories where students did their daily work in starter, culture, cream ripening, churning, pasteurizing and separating milk.

PROCEEDINGS OF THE OHIO DAIRYMEN'S ASSOCIATION HELD AT THE OHIO STATE UNIVERSITY, THURSDAY AFTERNOON.

Thursday Afternoon.

The convention was called to order by Pres. J. D. Nichols who said:

GENTLEMEN OF THE CONVENTION:—Owing to the fact that we practically gave up our afternoon session yesterday to the dedication exercises, it will be necessary for us to take up some of the subjects that should have appeared on that program. This will make our session this afternoon a very busy one, and we must all be patient until it is finished. We were very glad indeed to give way yesterday for the dedication of the buildings, and I am sure that you who were present enjoyed the exercises very much.

The erection of these buildings will add very materially to the work of the Department of Agriculture, and I am sure that the dairymen of Ohio will get their share of the benefits. I am sure that we are all interested in anything that will increase the efficiency of the dairy interests in this state. I want to introduce as the first speaker this afternoon a gentleman who is authority on the subject he is to discuss. I am sure that he will give you some valuable suggestions that you may carry home with you and put into practice. I have the pleasure of introducing Mr. W. W. Marple, of Chicago.

ADVANTAGES OF THE HAND SEPARATOR IN OHIO.

BY W. W. MARPLE, CHICAGO, ILL.

Mr. President, Members of Ohio State Dairy Association, Ladies and Gentlemen: I fully appreciate the honor conferred on me by your committee in asking me to fill a place on your program, and I realize the responsibility in connection with the discussion of any question pertaining to dairying and to dairy interests, and especially at a State Dairy Association meeting. The assembling of representatives of dairy interests in the capacity of a state dairy association is an annual event in Ohio and, to my mind, an occasion of unusual importance. The object and purpose of this organization is abundant and sufficient reason for serious thought and the most earnest presentation of truths in its deliberations.

The necessity for authentic information and the intelligent presentation of questions for discussion at this time is apparent, for it is desired that a report of this meeting may go out as a message of comfort and a means of assistance to the Ohio dairyman. In discussing the subject that has been given me, "Advantages of the Hand Separator in Ohio," for a short time this afternoon, I may not be able to suggest anything new, but I feel that my mission will not have been in vain if I succeed in awakening a deeper interest and encouraging a higher appreciation of the hand centrifugal separator—to my mind the most valuable piece of machinery ever put on the farm. This is an age of progress, an age of advancement, especially in agriculture, and I believe most heartily and sincerely in all of those modern appliances in the dairy that will facilitate the work and enhance results. I am not like the nurse who had in her charge a baby and was told by the mother to supply herself with a thermometer to use when she gave the baby a bath so as to have the water the proper temperature. She said she "didn't need it, that she could tell without it." When the baby turned red she knew the water was too hot, and when it turned blue she knew the water was too cold. I am glad you don't have to guess when the cream is raised, but have the appliances for determining certainly and an invention that will take it all out positively.

The same general principle in the handling of the product from the dairy in the most economical and remunerative way will apply in every section of the country. For the same general reason that the hand separator is an advantage anywhere it is an advantage in Ohio and to Ohio dairymen. For some special reasons it is pre-eminently advantageous to the Ohio dairyman, and I very seriously question whether it is possible for conditions to exist in any case or under any circumstances that would justify a man in Ohio, who kept cows for profit, in trying to do a dairy business without a hand separator as part of his equipment.

The history of all dairy countries is that they became so primarily from necessity. New York, Pennsylvania and Ohio were not originally dairy states. Minnesota and Wisconsin a few years ago were too busy raising wheat to waste any time milking. Iowa and Illinois were raising corn and feeding cattle and hogs and were too dignified to recognize a dairy cow as being eligible to any consideration as a wealth producer. My countryman in Missouri said he didn't milk because he didn't want to and because he did not have to. He was joined to his idols, and six days in the week you would find him in a tobacco patch and the seventh visiting his wife's relations. In Kansas and Nebraska a man's standing in society used to be governed by the number of acres or the number of train-loads of corn he had. In fact, the attitude of the farmer towards the dairy cow in these different states was very similar to that of the man who went to Chicago on his wedding trip. He went into the Palmer House and registered, and remarked to the clerk that he was on his wedding tour. The clerk assigned him a room and called the bell boy and handed him the key, saying, "Bridal suite on the parlor floor, $15 a day." The man had started toward the elevator and when he overheard the price of the room, he went back and said quietly to the clerk: "This is my third wife." The clerk called the boy back and handed him another key, saying, "Back room on the top floor, $4 a week."

Comparatively, that is the kind of treatment the dairy cow was subject to a few years ago in what is now the dairy section. But a complete change has occurred. She is now comfortably located on the parlor floor and the states where she was once neglected are now proud of the distinction they have attained through her as dairy states.

As an agricultural country grows older and the land more valuable, the manner of farming has to be changed so as to get results commensurate with the investment. This necessary change includes economical production and proper preparation for the best market so as to realize the highest price. In view of the enhanced value of Ohio farm land and the increased demand made on the Ohio farmer incident to better improvements and a little more extravagant living in accordance with the spirit of the times, it was necessary to make some changes and the most natural thing in the world was to take up dairying, because it was the most profitable branch of agriculture. It was a means of converting the raw material, even the low-priced product of the farm, into a high-priced manufactured article. It made the man who engaged in it a manufacturer, and as such brought him in close touch with the consumer with whom the limit of price had been reached. After the dairyman has had his feed manufactured into milk, the question of preparing it in the most economical, as well as acceptable, manner is of very great importance, and in this connection the hand separator is of special advantage in Ohio and to the Ohio dairyman. Some years ago in Nebraska, when good land could be bought for $15 to $20 an acre and it was no trouble to produce from 75 to 100 bushels to the acre, there didn't seem to be any necessity for strict economy in taking care of a crop, because each crop would pay for the land on which it was raised, and sometimes pay for it twice. But time worked a change in conditions in that country, and with that change came the necessity for more economy and the outcome was a change from so much corn raising to more dairying.

The wonderful boom in Dakota lands a few years ago, because of the marvelous wheat crops, is still fresh in our minds. It was no trouble to raise enough wheat on one acre of that land that was cheap to pay for two or three, and under these conditions strict economy would seem unnecessary. But that condition doesn't exist there now. They are not only compelled to practice economy in conserving their crops, but they have found it necessary to look to some other source of revenue, and by turning their attention to dairying they have added another endorsement to the value of a dairy cow as a wealth producer.

The man who would by intelligent effort raise a good crop of corn, and then when gathering it only gather the ears that were on stalks that stood up straight, losing the entire down row over which he was driving, would be considered extravagantly wasteful.

The man who would successfully raise a crop of potatoes that were valuable, and then in harvesting them take only the ones that stuck to the roots of the vines in pulling them up would be considered a fit subject for examination by a lunacy commission, and yet I see no difference in wasting corn and potatoes and wasting cream or butter fat. I see no difference between gathering the corn or picking up the potatoes that come handy and letting the rest go and saving only what cream or butter fat that rises naturally, which amount will vary according to conditions.

After the labor and expense necessary for raising a crop of corn or potatoes it would be considered poor policy to let a large part of it go to waste in order to save a little expense, which expense would be more than paid by the additional harvest. The situation is exactly the same in handling milk for making butter and the advantages of the centrifugal hand separator to the Ohio dairyman from this standpoint is apparent.

The additional amount of butter fat obtained through the medium of a centrifugal separator very soon pays for the machine and at once becomes not only a convenience and a labor-saver, but a paying business proposition and a decided advantage to the Ohio dairyman. My views as to the advantages of the hand separator in Ohio are formed from a close observation over a period covered by the life of the machine and an extended experience in handling the raw material from the dairy, which experience, for a period of 20 years, has brought me in close touch with the dairyman who has been the possessor and user of one of these machines.

I believe the hand separator was a necessity, and in this connection I ask your indulgence to the extent of a little history in connection with the business as well as the introduction of the machine. In attempting this I am not unmindful of the magnitude of the undertaking, and as I compare the task of explaining this to one who is entirely ignorant of the whole plan with discussing it before this audience, who are already so thoroughly posted, I am impressed very much the same as the street waif in a Chicago mission Sunday school, who had listened for some time to a description of the devil. He was told that the devil was a monster and that he was everywhere, traveling constantly all over the world, seeking whom he might devour and gathering fuel for the infernal regions. He was told that to resist him required a continual warfare, a constant fight, but the person who was brave and who was armed with the right kind of weapons could whip him. Finally, the teacher who had given such a graphic and impressive description of his satanic majesty, said to the boy who had listened intently, "Do you think you could fight the devil and whip him?" and the boy answered, "I don't know as I could whip a great big devil, like you have been talking about, but you show me a little devil about my size, and I'll fight him."

History, both sacred and profane, teaches us that for 2,000 years, even before the flood, dairying has been an important branch of agriculture. For 2,000 years the preparation of the product of the dairy into the most palatable food has been a subject for discussion. For centuries, since the time when out of the cow's motherhood we made merchandise, the question of commercial value and how to reach the highest point has been paramount to all others. I have no doubt that during this time there have been many warm discussions over who should do the milking, and in most instances I am equally sure it has been decided like the man said an argument was settled between him and his wife, concerning the kind of furnishings they would buy for their house. He said his wife wanted linen and he wanted cotton. Finally they compromised, and when asked what on, he said "cotton."

The introduction of the hand separator meant a saving of labor, a conserving of material, a greater interest in dairying, the establishing of butter manufacturing institutions, a better market for the finished product and better results for the dairymen. It has been a long time from one point of view and but a little while from another, since a few neighbors concluded to have their butter made at one place and by one person and put on the same market at the same time. Twice a day they hauled their milk to this place and put it into a large vat or pan, around which a generous quantity of cold water was kept, and it was allowed to stand there from 12 to 24 hours, when the cream was skimmed off and churned and the dairyman went and got his skim milk. This was an improvement over the old way, because the quality was improved and it was uniform and the quantity was increased. There was one kind of butter from the community instead of a dozen kinds. This worked for a time with general satisfaction and many of these places were started and the business was stimulated; but there were objections to this method—it got irksome. There was a great deal of work connected with it, and finally the old-time crocks and pans were brought into requisition, and, as in days of yore, the cream was raised and skimmed at home and it was taken to the churning place once a day instead of the whole milk twice a day. This seemed to relieve the situation some, and from an economical standpoint it was doubtless a step forward; but alas, that unending task of carrying milk up and down stairs or to the milk house or cave, and the washing of pans and crocks was creating a feeling of unrest; and as the business seemed to approach its final doom there was placed on the market what the originator was pleased to call a separator. It was a tin can within a larger one, with sufficient space between them to put cold water, in order to facilitate the raising of cream. When these were introduced, the creameries or churning plants provided themselves with teams and sent out over the country, gathering up the cream at the farmers' door and paying him for it by the gauge. There were two prominent features about this system that appealed to the producer. First, it was much easier to take care of the milk, and next, it relieved him of the trouble of delivering the cream.

Certain seasons of the year time was valuable to him, and this was an important consideration. He pronounced it the most satisfactory plan that had yet been adopted, and he increased his herd of cows and took better care of them, and a new impetus was given to the business. During all of these years the inventive genius of man, that seemed to have been sleeping, was at work, and when the old gathered gravity cream system seemed to have reached its zenith, the dairy and creamery world was astounded to learn that a machine had been invented that, through the application of centrifugal force, separated cream from milk while it was fresh and sweet. This was the power cream separator that immediately began to be introduced into creameries all over the country, and the original plan of hauling milk to the creamery was begun, with the decided improvement of having to go only once a day and being able to return with the skim milk. This machine gave the advantage to the dairyman of getting all of the butter fat out of the milk, which was an increase of from 15 to 30 per cent., and it gave the business a boom the like of which it had never had. The next step in the line of progress in the development of dairy interests was the introduction of the farm separator. This marked an epoch in the history of dairying everywhere that was of the greatest importance. It was the "ne plus ultra" of convenience and economy for the man who milked. It was the climax to a long varied experience in dairying and getting the product of the dairy on the market. It was the greatest boom to dairymen that had yet been offered him. It enabled him to prepare his cream for market on his own farm when it was most convenient, with the least labor and in the shortest time, and more than all this, it left the best quality of fresh, sweet, skim milk for raising calves and feeding pigs.

It enabled him to give this high-priced product the special preparation necessary for the particular market that offered the greatest inducement, whether for family use, for making ice cream or for the manufacture of butter, and it transferred the arduous task of taking care of the milk from the good wife and mother to the commander and chief, who used to sit around and smoke and whittle while the female portion of the household were violating the laws of nature and breaking the most sacred rule of every labor organization by working from 14 to 16 hours a day, and the children quit singing "Everybody Works But Father," and for this alone it was worth all it cost. I am serious when I say that I believe the advantages of the hand separator cannot be estimated either in influence or dollars and cents. It is to dairying what railroads and telegraphs are to the commercial and industrial world. I wonder if I am making it too strong to say its relationship to the life of dairying is the same as the relationship of oxygen to human life. I appreciate that sometimes when we are asked what we would do without certain conveniences that we are in doubt as to whether they are real or imaginary necessities. We say we used to get along without them and we guess we could do it again. I am convinced we couldn't do anything of the kind. Conditions have changed, and with this change certain demands have been made that had to be met. Demands that come in the line of progress, ordained from the beginning. It used to be said, out West especially, that the life of a dairyman was five years. It used to be a life of drudgery and very meagre pay. The history of dairying is that it is a sensitive business and won't stand a great deal of strain, and I believe that the introduction of the hand separator was just in time to save the life of the business. If I was to enumerate all of the advantages of the hand separator in Ohio, I would not only encroach upon the time of those who are to follow, but I fear I would be placed in the position of the old darky preacher who was discoursing on the prophets of the first and second magnitude. After talking for about an hour and a half or two hours, he said he would take up the prophets of the second magnitude, and he said: "What are we going to do with Elijah?" Everything was perfectly still, and he repeated twice, "I say, what will we do with Elijah?" Some fellow in the back of the house got up and said: "He can have my seat; I am going out." While I don't want to weary you, I feel that the subject is of sufficient importance to justify a little further discussion and I want to suggest the relationship of the hand separator to the several lines of dairying, and I am aware that all of these lines are represented in Ohio. From what I know of your state, and from statements made at this convention, I am convinced that a large proportion of your dairymen sell whole milk. One of the greatest dairymen I know of, and he sells milk, only keeps a separator and runs all of his milk through it to purify it, and I am sure there is nobody who ever saw a separator cleaned, but what would rather have milk after it had run through a separator than before, and in this connection, I want to suggest that great care should be taken to have the spouts so arranged as to run both streams into the same bucket or can. There is not a question of a doubt but what the enforcement of pure food laws with reference to milk has had much to do with inspiring confidence with the consumer, which has increased the consumption, created a greater demand and advanced the price, and whenever the dairymen of Ohio use all of the means and appliances at their command for the preparation of clean milk for distribution, then the stamp of Ohio on a can of milk will be synonomous with purity and the demand will be still greater and the price still higher and, like the beer that made Milwaukee famous, it will be the milk that made Ohio famous. The next consideration with the man that sells milk is the butter he makes for his own use. He may think that this amounts to too little to justify the expense. Then I would say to him, first, take a careful inventory of every piece of machinery on the farm that is a convenience and a labor-saving device that is not used much, that on the same basis is useless, and sell them. Take part of the money and buy a separator for the culinary department and put the rest in the bank. Then take a small piece of paper and a sharp lead pencil and figure on time and labor saved and quality and quantity of butter gained and render a verdict that will be satisfactory to your conscience. The next question that might be considered in this connection is the raising of the calf on skim milk. While I am not advised, I think it highly probable that many of the calves in the state are sold for veal very young. I have a right to suppose, however, that the heifer calves are raised, and I consider it a waste of time to say that you can't afford to raise them on whole milk, and the separator is the only means by which you can get the right kind of skim milk. In our country there are still some people who are prejudiced against feeding skim milk. They say it makes a calf pot-bellied. Some of you probably remember what Gov. Hoard says about this. He says if that's true he doesn't know of any better way to develop a good dairy cow, because that is one of the requisites.

You have in Ohio a number of cheese factories. For years you have maintained an enviable reputation for cheese. I am not posted as to the proportion of these that are operated the entire year. I do know that a few years ago there were a great many that only ran through the summer and I presume this is true, in many instances, now. I have no data as to running milk through a separator before delivering it to a cheese factory; and while I know the cleansing and purifying process would benefit it, I am not in a position to say it is practical and necessary and will not discuss it from that standpoint, but only refer (in addition to the similar situation or condition as in the former case, relative to making butter for home use and getting the benefit of the skim milk for raising calves) to its preparation for market in a way that will give it the highest value during the interim in which the cheese factory is closed.

To the man whose wife is making butter on the farm, in the farm dairy, from his own herd, for commercial purposes, there ought to be nothing to say, because I have a right to presume that he has a separator, but my observation teaches me they haven't all got them. Some time since I was riding along the road in Kansas, and as I approached a sod house I saw on one side a disk, a corn planter, a gang plow, a cultivator, a mowing machine, a hay rake, a harvester and a threshing machine. Every one of them had a comfortable seat. They were all modern and up-to-date, and as I passed I saw on the other side the good housewife churning hand skimmed cream in a churn that cost when new, so long ago that the memory of man runneth not to the contrary, about 60 cents, and which had in all probability been bought second hand at a sale for 10 cents. Then I thought of that beautiful marriage ceremony where a man puts a ring on his bride's hand and says, "With all my worldly goods I thee endow, etc.," and before the ink got dry on his marriage certificate, that man endowed himself with ten thousand dollars' worth of easy riding machinery to do his work with, and his wife with a ten-cent churn that she could stand and work the old up and down dasher till her back ached and she was black in the face. While I deplore an instance of this kind and am free to say it isn't fair, I am not disposed to discuss the question from this standpoint in Ohio, because it is possible the men do the churning here and don't depend on the women as they do over in Missouri, where I was raised. I asked a man one day in that state how dairying was progressing in his section, and he said, "Oh, it ain't doing any good; the women have got so onery they won't milk any more, and we've just about quit the business." The man who dairies is supposed to dairy for profit, and the man who makes the product from his cows in butter needs no other argument than the increased quantity he will be able to realize by using a separator. I refer you to Prof. Erf, your own professor of dairy husbandry, for the amount of this difference. It will surprise you.

Prof. Babcock, of Wisconsin, gave to the world an invention the value of which cannot be estimated, a "Babcock Tester," a machine for determining the value of milk. By it you can tell the relative worth of your cows. But it would be discouraging to know you had a cow that would give a hundred pounds of milk that had six pounds of butter in it and you could only get four and one-half of it out. A friend of mine in Chicago told me of a very valuable mine he had up in the mountains of Utah. He had tested the ore and he found there was a large amount of precious metal in it, but he said they would have to have a certain kind of a machine to get it out and they couldn't get it up there. So his mine was valueless because what they could get out without the machine wouldn't pay. The dairy cow is a gold mine. The

Babcock tester indicates that she is, and you have within your reach a machine that will get it all out. Can you afford to waste it? I answer no.

I will not have done my duty if I fail to give a reason for the faith that is within the man who has a separator and sells cream to the creamery, and the necessity for the man who patronizes the creamery and hasn't a machine for buying one. The man with a separator on his farm separates his milk immediately after milking, cools the cream at once and puts it where it will keep cool, feeds his calves warm, sweet, clean, healthy skim milk regularly at the time they should be fed and every other day, or in very cool weather every third day takes his cream to the creamery. The man who has no separator, when he milks at night puts it in as cool a place as he can provide to keep it sweet until morning, and instead of one gallon of cream he has ten gallons of milk to make a place for. Then in the morning, after milking he takes both that and the night's milk in a two-horse wagon to the creamery to be skimmed. When he gets there he waits till his turn to unload, and if the separator hasn't started he waits till it does to get his skim milk, and when his portion of milk is given him he has a conglomeration of stuff from a dozen herds or more, possibly some of it a little sour and much of it laden with the germs of tuberculosis, and he hauls it home to inoculate his own cattle. If he lives any distance, he has lost nearly, if not quite, a half day, and if he is raising his calves on skim milk their supper the night before and their breakfast was clabber or else they haven't had any breakfast until he gets home, and he finds them half starved. He feeds them too much. He doesn't feed them regularly; the milk he feeds them is vile, and the outcome is, after hauling skim milk all summer to feed his calves, he hauls them out back of the barn in the fall and buries them; then swears you can't raise a calf on skim milk, and he knows, for he's tried it. I apprehend that in this intelligent audience there is not a man that has had this experience, but within my personal knowledge their name is legion, and do you wonder I recommend and urge the purchase of a separator. It means economy of time, economy of labor and more money, all of which are essential.

I am impressed that in addition to the reasons I have given, for the man (who keeps cows) having a hand separator, there could be none stronger or more forceful than the fact that it makes him independent. He can then patronize the market that will return to him the most money, because he is equipped for putting it into any shape desired. I can remember at different times when corn was worth 50 cents a bushel in our country at home, and there was a market for a limited amount of corn meal at 70 or 75 cents, occasionally as high as $1. Then farmers would have some of their corn ground and sell the meal. I have seen the price of butter fat this winter at the creameries 23 cents and butter worth in many local markets at the same time 30 cents. Under these conditions it pays to make butter. So the man equipped with a hand separator can sell butter fat when it is the most profitable and he can sell it on the market that pays the highest. He can sell sweet cream for other purposes when that is the best market. He can make butter when that is the best. He can sell milk for cheese or for city consumption when that pays the best, or when he has a surplus he can convert it into cream, or if his milk begins to turn and it won't do for city use or for cheese, he can separate it and sell the cream for butter. He is made independent and he has the consolation of knowing that he is in a business in which it would be impossible to form a trust to his disadvantage.

It is said there are 45 or 50 thousand hand separators in Nebraska, and I suppose there are as many in Kansas, possibly as many in Iowa, and from 15 to 20 thousand in Ohio. With what knowledge I have I would venture the opinion that the introduction of these machines in large quantities commenced in the West, and I want to say they were not introduced without an effort, and I would pay a tribute to the army of ambassadors for good who traversed and canvassed the country and introduced them. I verily believe that a separator agent has done more to build up dairy sentiment and improve dairy conditions and increase dairy productions than any other agency that has been employed in that direction, and because of their work, I would this afternoon select from all the languages of earth the choicest words and weave them into garlands of praise as an expression of gratitude from the dairy interests everywhere. The difficulties with which they had to contend in the beginning are fresh in the minds of every dairyman with whom they ever came in contact. Their experience reminds me of the story of the two Irishmen who were spending their first night in America in a New York hotel. One of them was looking out of the window and a fire engine went by with the sparks flying everywhere. Very soon another went by on the street below, making a terrific noise and spitting fire, and he says: "Mike, they are moving hell; they've gone by with two loads." There was a great deal of prejudice against the hand separator and adverse criticism was freely expressed. Many of them were honest and some were prompted from selfish motives. People were warned to go slow. They called it a fad; they said it wouldn't work, and whenever a bad tub of butter was put on the market it was blamed on the hand separator. The commission man said he wouldn't handle the butter, and it was a continual fight. But this was one question the dairyman settled himself, regardless of advice. The separator came, the dairyman saw, and it conquered. When the inspector found a dirty machine, the man told him that the agent said he only need wash it once a week. There may have been instances where he did say so; I think they were rare, but suppose he did—somebody made him say it. What would you have done if you had been trying to sell a machine the success of which your family's living depended upon, and the man would say, "I'll buy that machine if I don't have to wash it every time I use it," and it seemed so easy to make the sale and the tempter conquered and the agent said all right. The man that bought it knew better all the time. If he didn't, the first time he let it go a day or two he found it out by the smell. I knew a man once who said they never washed their dishes as long as they could remember what they ate off of them last. That man would have to experience a change of heart before he would make a dairyman, anyhow. The edict went forth the separator had come to stay, and since that there has been one united effort to eradicate evils in connection with their use, and each year shows an improvement. This is a sensible view, for the perpetuity of dairying depends on the continued use of the separator.

I would say to the citizens of Ohio, are you in the dairy business without a separator? Would you go in the livery business without a horse? Would you go in the grocery business without scales? Would you go in the dry goods business without a yard stick? The cases are similar and the results will be the same.

In conclusion, I want to say you are having a great convention. You are doing a noble work. Don't forget the place your great state occupies in the history of this country. Your achievements have made you famous, and in the settlement of grave questions, either state or national, you have never wavered, and for this I bring a message of gratitude from the people of my own state. In the great conflict of '61 to '65, when he whose centennial birthday has just been celebrated, called for volunteers to save the country that had been purchased by the blood of our forefathers, you responded liberally. Later, when one of our great political parties was assembled in convention and when they were in the very throes of dissolution for want of a leader, when the bitter strife of political aspirants had eaten like a canker until the life blood of a great organization was fast ebbing away, you furnished a healer and a deliverer, and from Ohio a man went to Washington and was inaugurated president of these United States, an acceptable leader, and the sacrifice he made and the loss you sustained was the life of James A. Garfield; and later on in a period of our history that was critical, when the nation needed a statesman and a patriot to pilot through the breakers the great ship of state, you again came to the rescue and furnished us with a leader who would rule over us at Washington, a peerless statesman, a paragon of wisdom and judgment, a noble patriot, a true Christian citizen and the noblest work of God, an honest man, and his name was William McKinley. He, too, sacrificed his life in the discharge of his duty and as the world worships and mourns at the shrine of the tomb that marks the last resting place of this departed statesman, we remember that in the hearts of men a monument has been builded and on memory's wall there hangs a tablet on which is inscribed in letters never to be effaced the name of the state from which he came, "Ohio."

And as you remember these great men and their achievements, I ask you in your deliberations here to remember the true, faithful, loyal mother of Ohio in her humble home, as she works to support her children, for whom her feet pressed the brink of death's dark river to give them birth. Send her a message of encouragement and let the information that goes out from here be like a beacon light in her dooryard to brighten her pathway and open to her visage that word that means so much to all of us, SUCCESS.

CREAMERY MANAGEMENT.

BY D. A. CROWNER, COLUMBUS, O.

To manage a creamery we must have a creamery business; to have a creamery business we must have milk and cream delivered to the creamery in large quantities at a price consistent with profit making.

The first proposition for the creamery manager, then, is to get the promise of sufficient milk at the right price to run the creamery successfully. From the farmer this will be expressed from the number of cows. The milk from four hundred cows will be necessary. I would put that as the lowest number to start with.

In a neighborhood that has not been accustomed to sending to a creamery or cheese factory, you cannot depend upon verbal promises. A signed statement will give you the cold facts, which cannot so easily be turned into the good will of the cows instead of their milk. I know that the one who is promoting a creamery is very apt to be over-anxious and apt to accept as a promise what was intended to be a means to get rid of him. The same is true of developing a hauler's route. The experience of most creameries is that routes are very expensive, so get farmers to deliver their own milk.

If the milk is to be bought, the easiest and safest way is to buy on some market as a standard. The Elgin, Chicago or New York Board of Trade's quotation could be used, agreeing to pay above or below that quotation as the business would allow.

In Ohio, there is a very large amount of milk handled on the semi-co-operative plan, in which the company owning the creamery gets a price per hundredweight for the milk handled, irrespective of the price received for the products sold. This is about the same as rent for creamery and apparatus.

Out of the gross receipts are deducted the running expenses, such as cost of coal, packages, buttermakers' salary, etc., the proprietors standing all the expenses of repairs, etc. Some creameries put this on a butter-fat basis, in which they charge for pounds of fat handled instead of the pounds of milk handled. There is a talking point in favor of the butter-fat way, as it can then be said that the company is interested in the tests as well as the weights.

After one has made himself sure of a large supply of milk or cream, the choice of a location should be considered. Look for good drainage and pure water supply, also nearness to shipping station.

The selection of creamery apparatus and building plans is a very important matter. Get all the information you can by studying catalogues and price lists and by travel. Then use your best judgment.

The creamery foreman should be a prepossessing man, one who can make and hold friends, and above all else, a man who has a deep-rooted conviction that the truth will prevail; a man that cannot be talked into either lowering or raising the test or changing the weights. There are many temptations to do these things to hold patrons. He should have complete supervision of the creamery work, and if he does the weighing and testing, stand up for him or else be honest to your own convictions and discharge him. The management should require of the foreman a daily butter-fat balance. This balance should show fat received each day and how it was disposed of. This should give information that ought to check errors in tests and weighing. It will put the management in a position to say he positively knows that the weighing and testing is being done correctly.

Selling of the products of the creamery may be done on commission or by contract, or sold direct to the retailer. Nearly all of the creameries use all of these methods to some extent. Our company has had some experience in selling direct to the retail trade. We now know that the jobbing of butter is not one of the most pleasant things in the business world. The commission way is the easiest way and we have had to use it in conjunction with other methods. Here is where many creameries have had trouble. There are many letters written on glowing letter heads, telling of prices away above the markets. These come from men who are in the commission business to get the best of the unsuspecting and ill-advised creamery man. Many creameries have had to go to the wall because their accounts had been placed with this kind of commission men. The whole commission business is based on the idea of the absolute truth of the commission man. When it is taken into consideration that the men whom the commission man sells to are shrewd buyers, I cannot see how anyone can think that one commission man can, on the average, get so much more than another in the same market and one who has the facilities. Pick your commission man for his worth as a business man and his financial responsibility, and you will not be sorry.

To some, the disposition of the buttermilk may be interesting. For the most of us, the selling of it to feeders is the only way practicable. Some feed hogs themselves. I had to do this once to show that skim milk was a valuable food. We then traded the buttermilk for the skim milk. That fall we sold a nice lot of fine sows for breeding purposes. The temptation was so great that we continued in the business for some years. Selling buttermilk for drinking and cooking purposes should be done when the conditions are right. You will find that to do this will require a great deal of care. We have found trouble every time we have bought from other creameries and have had some trouble with our own product. It must be remembered that, for the most part, it is used as a beverage and not a necessity, so the buttermilk must always be delicious so as to work on the appetite.

Theoretically, we now have our creamery on a sound basis and we should be able to send out the dividend check ahead. More experience will teach you that you have not more than well begun.

One of the things that has impressed itself upon me is that, for the most part, farmers do not like to keep accounts. We can get only a small portion of them to weigh their cream. In other lines of business the seller makes out the invoice and presents the statement. In the creamery business the creamery man weighs the milk and keeps all the accounts. Well, now, we must give the farmer credit for being wise here, at least. In this case the creamery man is the only one who can make mistakes. I am sure there are many creamery men who would be glad to let the farmer make out the statements and do the testing and weighing. Glory of glories! Do you suppose it will ever happen? What value do you suppose the average patron would give to a statement from the creamery man saying that he would like to have the patron cut the test down, as it was too high; as they had made a test of their cream last year and found that it did not test as high as they reported it, and then, too, they had not been, of late, getting as high a churn gain as the creamery would like to have. Is that more than some of us have had from the patrons? Does this not sound familiar? "We are not at all satisfied with the test you are giving us. We churned a can of cream last month and got sixteen pounds of butter fat, while you reported the last can as containing only ten pounds of fat. If you cannot make our test higher, we will have to go to making butter. My wife is an excellent butter maker, and some of our butter customers have bidden upon the price they would pay and now would be a good time to stop. We hope you will do better, as we like to sell cream, as there is not so much work to it." Well, the patrons are not all that kind and we can say that we believe the most of them can be taught, as the letters of this kind that we get are nearly all from the new patrons.

When I started in the creamery business I had a conviction that I would be honest. I also thought that, for the most part, the creamery and cheese factory operators were dishonest. This came from disgruntled farmers and mostly from those who had poor dairies. My conviction that to be honest is the only way to handle a creamery has not been changed, but I have been sorely tempted at times. I have since had good evidence that the outdoor life of the farm does not always change one's ideas of the reality of truth. I believe, however, that one of the most pernicious ideas that a creamery manager can get into the heads of his employes is that the patrons are to be classed as ignorant and dishonest. If this is allowed to be talked, you cannot expect your employes to give the patrons even courteous treatment, so any talk of that kind should be put down. I like to think that men wish to be fair. By education and by fair treatment most men can be made honest enough, at least, to do business with. You should give your patrons a clear cut statement of the creamery methods so that he can compare them with his own knowledge of home butter making. Talk accurate weighing instead of measuring. Talk careful sampling and accurate testing methods; then be sure you have adopted the most accurate methods yourself, then you have a right to expect his confidence.

You can have patience with honest ignorance, but patience with dishonesty and wilful ignorance is a vice and not a virtue. A dishonest neighborhood gossip for a patron will do more damage than you can overcome in many weeks of fair treatment. To such, a clear-cut talk that will either make them quit or stop their dishonest methods is the only alternative.

There is some reason for the thought of dishonesty among creamery men; such as bad testing outfits, old scales and general carelessness with the sampling.

The improvement of the quality of milk and cream has had a great deal of attention given it. So far as I know, there is no other road to it except the one spelled "c-l-e-a-n-l-i-n-e-s-s." You can talk about your "bugs" and the new kind of flower plants that they find in milk, but if you can just keep that rich soil out of the milk, the plants and the bugs will not do well in it. Here is another place where a good example goes a long ways toward results.

You may be able to sell a woman any old kind of cloth better by giving it a new "Parisian" name, but that does not seem to work when it comes to keeping bugs out of milk. I guess the only way to get at that is to fix up some way so that the clean milk will buy more of the gowns than the dirty milk—then there will be some hopes of getting results. This method is sometimes called "grading milk and cream." That seems to work and is practiced by some of the best people.

THE HAND SEPARATOR SYSTEM FROM THE DAIRY TO THE CONSUMER.

BY J. T. BENTLEY, CIRCLEVILLE, OHIO.

Mr. Chairman: The broad topic assigned me possibly has suggested to some of you (especially to those who do not know my limitations) the precaution or wisdom of providing yourselves with a lunch; but you who are church men (and I trust that you all are) doubtless have observed that preachers who know the least, whose range of thought is limited, usually select the biggest texts; and history often repeats itself; however, I promise that I will, as far as possible, supplement the limitations hinted at with a boiling down process.

It is not my purpose to address myself so much to creamery and dairy methods as to equipment and market fads. There are able speakers here to talk on feeding and breeding problems, sanitary conditions, environments, cleanliness, etc. I am here to talk on the farm separator, which is at present the subject of perhaps as much thought and comment as any other single feature in dairy science, and I am here to hail it as the leading factor in a revolution on dairy equipment and economy. The hand separator gathered-cream system is becoming so popular throughout the country that the whole-milk factories are beginning "to sit up and take notice." It is here to stay, and being comparatively new it is made a scapegoat for many evils that existed before its arrival. as well as the greater evils resulting from crazy fads cherished by market experts and butter exchanges, of which I will have something to say later.

At the second convention of the National Creamery Butter and Cheese Makers held in Dubuque, Iowa, about fifteen years ago, I was on the program, my subject being "Gathered Cream vs. Whole-milk System;" rather a tough proposition, since the factory separator plan was then at the zenith of its popularity, the hand separator having attracted little attention at that time. They were just being introduced, possibly one or two in the country here and there, and were generally looked upon by the factory men as an experiment of doubtful promise or importance.

After discussing at some length the comparative economy of the two systems, I made some observations concerning the problem of evolution that was dimly visible in the near future, venturing a prediction that in a few years the farm separator system would supersede the factory separator system and that many of the whole-milk plants would become gathered-cream plants.

As far as I know, I was among the first in the line of such prophets, and the visible effect of such visionary prophecy upon the large audience almost made me shudder; had it not been for some degree of fraternal restraint, I am sure they might have egged me for a crank; they certainly looked it.

However, at the close when I took my seat, Governor Hoard came to my relief and not only endorsed my prediction but made it still stronger, which made it comparatively safe for me to go to my hotel without a guard.

Gentlemen, I am now even more of a hand separator crank than I was then. I have survived all ridicule, doubts and criticisms, and am seeing my prophecy rapidly coming to pass, and the manufacture of creamery butter cheapened, and dairy by-products largely enhanced in feeding value.

The hand separator is destined to revolutionize dairy methods all over the world, as well as creamery methods; it is here to stay, and will soon be as indispensable on the average farm as the sewing machine or self-binder. This being a fact no longer denied, we are now confronted with the problem of education in the use and care of machines, and the greater importance of intelligently caring for the products from the machine, that what is gained by its use may not be lost through the subsequent ignorance or carelessness.

Unfortunately many machines are sold by agents who know little or nothing about dairying or dairy products, and are not capable of intelligently instructing the purchaser as he should be instructed. And then there are agents who will give out instructions, such as are convenient in closing a deal, making it appear that the machine is a kind of automatic affair.

I often find instances where the agent tells his customer that it is not necessary to wash the machine but once a day, and leaves without cautioning him against adding fresh cream to cold cream, and possibly many other important points, of which he may be ignorant himself. He has no point in view except to sell a machine and secure the agent's commission. And then we meet with dairy farmers, especially among those who are not doing a large business in this line, who get the idea that the cream separator will correct all the evils in buttermaking without thought or effort on the part of the operator.

So that before universal good results may be expected, there must be years of education, "line upon line, precept upon precept, a little here and a little there," something like the education disseminated by early creameries (which are at it yet).

I think it would be wise for our experiment stations to devote a few pages every year in their bulletins to instructing hand separator operators in the care and operation of machines and the care of the cream, ripening of the same, and the science of furnishing fine cream or making fine butter. This, with the creamery instruction and the educators turned out every year by the dairy school, should in a few years raise the standard of both creamery and dairy butter to meet all requirements. Cream is not so easily contaminated or tainted as whole milk, but operators must, in many cases, be instructed in the proper care of the cream until shipped or cared for, so that it may reach its destination in prime condition.

I maintain that as fine butter can be produced from hand separator, gathered-cream as on the whole-milk plan, if patrons are properly instructed. But I must hasten. With creameries the next important step after receiving such cream, is a common sense method of pasteurizing it. I use a device for the application of live steam in an open vat, and I believe I have the distinction of being the first creamery operator in the United States to adopt pasteurization on a larger scale for butter making, drifting quickly into the same system I now use, and which I have used with perfect success for about fourteen years. I have never seen any other that I would exchange for, and I think my competitors in the selling markets will frankly admit my success along that line.

But I submit that heating cream, however scientifically done, is of secondary importance compared with a proper and efficient system of cooling it. That is the point at which many fall down. It is so easy to lose in cooling all we have gained in heating. I dare say that inferior sytems of cooling account for nine-tenths of failures along the line of pasteurization. A combined heater and cooler is to my mind as great a prodigy as a dual purpose cow that excels in both lines.

I use practically a sealed process of cooling, which protects cream from any possible outside contamination, and by cooling my cream 100 degrees Fahr., in a minute I pass over propagating temperatures so quickly that internal propagation is reduced to a minimum. Thus my commercial starter predominates and is in full control in my ripening vat, giving me reliable and uniform results at the churn.

The butter maker, of course, must understand handling and ripening pasteurized cream. The churning process, however, does not differ materially from raw cream.

Now a few observations on flavor fads. The flavor fad that has reached such extremes in eastern distributing centers, originates and ends with the receiver and jobber; not in the culinary department or on the festal board.

My observation and experience is that in the homes, if you please, a mild cream flavored butter that can be depended upon to remain sweet under average conditions until consumed, is given the preference. In some of the sea-board markets, the standard on a quick, sharp flavor has, for some years back, been strained upward a notch or two each year until an extreme is reached that is disastrous to butter making.

Many, who have in the past enjoyed excellent reputations as fine butter makers, have been lately mortified and discouraged in their efforts to meet these requirements. No objection to any other score points, but I submit that this one extreme is disastrous, inasmuch as it forces butter makers past danger lines in their efforts to meet the requirements of a crazy market fad.

Of course there may be other indispensable features in developing a fine flavor, but today all other points must be augmented by a dangerous extreme in the development of acidity that approaches or passes a point of decomposition in our effort to meet this disastrous requirement of flavor under the official score.

Butter may be fine on shipment day and off many points at its destination; butter maker blamed, hand separator blamed, frosty grass given a cause, receivers charged with dishonesty and anything else that comes to mind.

Think you that butter making is a lost art? Many brands that used to sell at the top are now below extras; same butter maker, same conditions, same or better dairy cows, more experience, more knowledge, better equipment, but lower grade of butter. Is it really true? Yes, it is true. The butter is really poor. Why is it? Market fads have led them to hazardous extremes and results are but natural. "Sow to the wind and reap the whirlwind;" from cause to effect, that's all.

I submit that sharp, quick flavored goods are hazardous for storage purposes, unreliable on the block, and often unsatisfactory in the larder. So, beginning with the creamery, it is hazardous from start to finish, while a clean, mild flavored goods is reliable for storage, for the cutter or rather freezer, in March as sweet as a nut.

When this reason again reigns on this line, old butter makers will retain their former reputations and the markets will receive more fine butter than for years past.

Lastly, I would suggest that all conventions, where premiums are offered on butter, should make a ruling that all exhibits should arrive eight or ten days before butter is to be scored; not less than this is fair to a good butter maker. A few years ago, at this place, at a meeting of the association, the judges gave the first premium to a tub of butter that when scored showed up fine, and the next morning, or before the adjournment, was too strong for table use. So I submit that keeping quality should be one of the most important points to be considered in scoring butter, and this all important feature cannot be successfully brought out except by an aging process in a temperature not below 50 or 60 degrees, holding all exhibits thus eight or ten days. If this is done, I will take my chances with the rest. This is easy if the butter maker knows how to make butter.

We exhibited granular butter last November at "Circleville's Famous Pumpkin Show," in granular form, just as it came from the churn twelve months before. Of course, an expert could detect a slight held flavor in it, but no rancidity or butric-acid development was in evidence. It was perfectly sweet.

This butter was placed in ordinary milk bottles right from the churn, with nothing but the ordinary paper cap in the mouth of the bottles, not sealed in any manner. They had been held for ten months in temperatures varying from 40 degrees Fahr. to 65 degrees Fahr. This I mention in evidence favoring common sense systems of pasteurizing and common sense rules for ripening cream. This was made from the average cream gathered twice a week and treated exactly as we treat all cream received.

East Lansing, Mich., Feb. 11, 1908.

Prof. E. S. Guthrie, *Columbus, Ohio.*

Dear Friend:—When I wrote you that I could come to Ohio to be present at the annual meeting of your Association, February 12th and 13th, I did not expect to terminate my life in Michigan this spring.

It now seems probable, although the matter is not fully settled, that I shall leave the country early in May to develop agricultural education in the southernmost state of Brazil. I have been with you many times in the past, and feel that I know the dairymen from Ohio. I have enjoyed my frequent visits, and regret that I am to be away this year. Extend to President Nichols my appreciation of his continued courtesy, and bid the dairymen a most earnest Godspeed.

Yours respectfully,
C. D. Smith, *Director.*

MARKET MILK.

BY F. E. DAWLEY, FAYETTEVILLE, N. Y.

In considering the subject of milk to be used as cooked or uncooked food in the home and bake shop, all those interested—producers, consumers and dealers—must take into consideration a few facts, one of which is that milk is going to cost the consumer more money than it has in the past; another that it must be cleaner milk, and another that under present conditions, the cost of producing milk is nearly twice as much as it was ten years ago.

There is no need in arguing against any of these propositions. The attitude of the general consuming public toward the milk question is evidenced by the newspaper and magazine articles which we are constantly reading. The demand for and use of so-called certified, high-priced milk, and the laws and regulations which are being put into effect by the health boards of our cities are evidences that cleaner milk is being demanded. The increased cost of labor and cattle feed, the extra demand for labor, and the increased cost of equipment and keeping it in condition are evidences that the producer must receive more for his product, and the law of supply and demand, other things being equal, will take care of the item relating to the price which the consumer pays. There never was a time when the milk producers of the country needed complete and thorough organization to protect themselves against unjust discriminations as now.

Men have been talking to us very glibly about bacteria and the effect of bacteria in milk, during the past few years, and I fear that some of us have come to believe that there is a difference between the condition which these micro-organisms produce in the milk and that which we used to find produced by the ordinary dirt. We Americans seem to enjoy cutting out the common, every-day term and substituting something more high sounding. Scientific research, during the past few years, has made wonderful strides in many directions, and the discovery and development of the fact that a piece of glass, ground in a certain form, enabled men to see things which were not visible to the naked eye and to study them has enabled the scientist to study and describe to us a new world which exists, and to explain very many of the reasons why certain forms of dirt are more injurious than others, and their study, to a certain extent, justifies many of the rules and regulations with which boards of health are surrounding the production and handling of dairy products.

All dirt carries more or less bacilli, and under favorable conditions they multiply very rapidly. For instance, if a bacillia divides, forming another every thirty minutes, and we start with one, in half an hour we have two, in an hour four, in an hour and a half eight, in two hours sixteen, in three hours sixty-four, in four hours two hundred and fifty-six, in five hours one thousand and twenty-four, and in twenty-four hours seventeen million organisms. This gives us some idea of what the contamination of milk would be. If we start with only one thousand organisms, at the end of twenty-four hours we would have seventeen million times a thousand.

I am only a milk producer and not a scientific investigator, but I want to call your attention to a very few of the common requirements of boards of health, and under each to speak of some of the scientific investigations which have been made, showing the necessity of such regulations.

My observation leads me to believe that one of the rules which the average producer objects to most is the one relating to cleanliness in the stable. While there may be many clean stables, in which the cows are groomed enough to keep them respectable, we are very sorry to admit that there are others, and in these others we often find cows whose flanks are literally coated with excrement which dries on during the winter months and sheds its coat each time the cow is milked, not, however, visibly diminishing the quantity attached to the hair. In the spring, this drops in large flakes as the hair is shed, and a most unsightly as well as unhygienic condition is maintained throughout the winter months. A cow in this condition was milked and, although none of the large particles of dirt were observed dropping from her sides and udder, one-fifth of an ounce of filth was found in ten pounds of milk, or an ounce for each fifty pounds, and it is probable that some of it had been dissolved and was held in solution and could not be strained out.

Another cow had been groomed and had been kept clean. When the milker sat down her udder was brushed off with the hand, and when she was milked it was found that it would take two hundred and seventy-five pounds of her milk to give the ounce of filth. Another cow's udder was washed with warm water and wiped dry with a towel, her flank had been previously clipped so there was no long hair growing upon it, and an examination of her milk showed that one would have to search twenty-four thousand pounds of her milk in order to get the ounce of filth.

Petri plates exposed under udders during milking showed five hundred and seventy-eight colonies from an uncleaned udder, as compared with one hundred and ninety-two colonies from the clean udder. A similar experiment showed 20,500 colonies on the petri plate under the unwashed udder as compared with 483 when the udder was washed. The results of practically all the examinations which have been made show that the number of bacteria in milk follows closely the amount of dirt. For instance, milk containing .04 grammes of dirt per cu. cm., contained about 3,000,000 bacteria per cu. cm., and that containing .12 grammes of dirt per cu. cm., contained 6,850,000 bacteria per cu. cm. Particles of dust and dirt are heavily laden with germs. A piece of hay about an inch long has been found to carry 1,500,000; a piece of sawdust 2,000,000; a hair from a cow's flank 26,000,000; and a single fly 21,000,000. If we accept in any degree whatever the statements of our bacteriologists, the health board rules demanding that stables be kept clean, that the cows be kept free from filth, and that they be groomed sufficiently to keep loose particles of hair and dandruff from dropping from their bodies; that the stables be so constructed that the dust in them is reduced to a minimum, are simply just, and we, as milk producers, should meet these requirements and let the consumer pay the cost.

The requirements relating to light in the stable are of as great value to you and I, as cow owners, as to the consumers of our product. It has been clearly demonstrated that the germs of tuberculosis by exposure to direct sunlight for half an hour at a temperature of 86 degree Fahr. will be killed, and that the germs of typhoid fever succumb to sunlight in about six hours. Practically all types of bacteria exposed to direct sunlight are killed in a few hours, and even diffused sunlight is said to have a marked injurious effect upon their vitality. Sunlight is nature's most effective germicide, and the health of our animals, to say nothing about the pleasanter stable to work in, should lead us to so construct and alter our buildings that the greatest possible amount of light may be had.

Even in clean stables, the movement of the cows at milking time and the movement of the milkers about the room raises more or less dust, and as it appears to have been demonstrated that dust in the stable is one of the most frequent causes of trouble, the milk should certainly be removed after each cow is milked, or at least as soon as a pail is filled. A large number of experiments which have been made clearly demonstrate that the bacterial count is very greatly increased when the milk is exposed in open cans or pails in the stable atmosphere. Feeding the cows before milking is also a very potent factor in increasing the dust.

It is practically impossible to keep an old wooden stable floor even respectably clean, and when it is once filthy and soaked with the liquid excrements, I know of no method by which it may be kept sweet. Plates exposed on wooden floors show, on the average, a little more than twice as many bacteria as similar ones exposed on cement floors.

It is a generally accepted fact that a good coat of whitewash is one of the most thorough disinfectants which can be used, and from the fact that colonies of germs which may have been attached to side walls and ceiling are thoroughly stamped out by each application, and the cracks and crevices filled so that there is no opportunity for them to lodge, and the general sweetening and improved appearance of the stable should lead all men to whitewash at least twice a year, irrespective of health board requirements.

In speaking of the care of the dairy utensils I realize that we are now getting onto dangerous ground. We all have a certain amount of pride, and it is my opinion that the average milk producer will rank ahead of the average consumer in his ideas and practice relating to cleanliness, but it is a fact that a great many men (and women) wash milk pails and get them fairly clean. They take a teakettleful of hot water, pour it into the first utensil, pouring from that into another, and from that into another, goodness knows how many more, and I wonder to what extent the scalding is effective. Do you suppose that even the first utensil is made sterile? Is it not a fact that when you examine a hundred milk cans, that in far too great a per cent. of them you find cheesy matter collected at the seams? (You producers stop scowling now. I will get after the consumer and dealer by and by. This is their inning. Yours comes later.) You and I know that one of the greatest difficulties in giving the public the quality of milk they should have comes just at this point, and, while it seems that it should be a very simple thing to remedy, it appears to be a hard one.

Let us see what the scientist says about this matter. Sterile milk drawn into a pail, sterilized by steam, after standing a certain number of hours, contained 165 bacteria to the cu. cm. Milk drawn into a pail, rinsed and scalded thoroughly, contained 4,265 bacteria per cu. cm., and milk drawn into a pail which had been washed and scalded, that is, simply rinsed and scalded in the manner I have spoken of before, contained 10,000 bacteria. Milk which had been drawn into a pail which had been exposed to the air in a clean creamery, after having been sterilized, contained 1,600 more bacteria per cu. cm. than milk in a pail which had been sterilized and kept covered until used.

Water is a first-class medium for carrying pathological germs and, in my opinion, it is responsible for many of the sins which have been charged to the cow. Water taken from a certain running brook shows as low as 25 bacteria per cu. cm., and the same water when stale in a milk cooling tank contained 35,000 bacteria per cu. cm., and nearly 1,000 of these organisms were capable of causing putrifaction in the milk.

As regards employes; here again is a fertile source of contamination. About 1870, physicians first began to consider milk as a carrier of disease, and between that time and 1902 there were recorded 195 epidemics of typhoid fever, 99 of scarlet fever and 36 of diphtheria, making a total of 330 epidemics of these three diseases which appeared to be traced directly to contaminated milk. Reports from 39 veterinarians in seventeen states show results of examining 165 herds of cows. These included 549 positive cases of tuberculosis and 242 suspicious cases, making a total of 791 or about 25 per cent. In cases a very large majority of the herds tested were found to be diseased. It seems to be but just that the consumer of our dairy products should know that the milk is drawn and handled by persons in the best of health and that the cows themselves are free from disease.

A German authority states that in milk which was drawn with hands there were 9,000 bacteria per cu. cm., while in milk drawn from the same cow with dry hands there were but 5,600 bacteria per cu. cm. Even when the hands of the milkers are clean, milking wet is a filthy habit and should be discountenanced by all producers.

While it is not likely that singing, whistling or loud talking particularly affects the quality of the milk, unless the cows are unduly excited, children or small animals running about certainly do raise a dust, and it has been clearly proven that the quality and quantity of milk have both been seriously injured by disturbances in the stable at time of milking. I believe that quite a positive source of loss comes from milkers visiting with each other. The noise of the milk striking the sides of the pail causes first one and then another milker to slacken his work in order that he may understand what the other is saying, and from the fact that the cow is not milked evenly from start to finish she gives less quantity and poorer quality.

If milk is to be tested for its bacteriological content, one cannot afford to let the fore milk go into the pan. The average of many examinations shows that the first two streams of milk contain an average of 10,143 bacteria per cu. cm., as compared with 272 in the fifth and sixth streams. This certainly is strong evidence and speaks for itself.

A large number of experiments have been made under similar conditions, with pails of different sized openings, and it has been proven that from 25 to 89 per cent. of the insoluble dirt found in the milk which is drawn into the ordinary flaring top pail can be excluded by using the small top pails. The number of bacteria in milk collected in an open pail was 33,150 per cu. cm., and milk collected in the same barn in a small top pail contained but 1,740. One can readily see how this comes about. An ordinary milk pail with a fourteen-inch opening exposes about 150 square inches, while a pail having a ten-inch opening exposes but 80, and a pail having a six-inch opening exposes about 28 square inches. Under average stable conditions, where the cows are bedded, you can safely figure that changing from a fourteen-inch to a six-inch pail will reduce the bacteria about 75 per cent.

Even though the number of bacteria in a sample of milk may be relatively low when drawn, if this milk is not properly and quickly cooled down to 50 degrees Fahr., or less, the bacteria will multiply very rapidly and by the time it reaches the consumer a very large bacterial content will be shown upon examination.

Perhaps more experiments have been made along this line than any other connected with the milk market. A sample of milk containing 7,377 bacteria per cu. cm., when first drawn was cooled immediately to 60 degrees Fahr. and kept at that temperature. The average number per cu. cm., after twenty-four hours was 10,876,000. When the milk was set in running water at 60 degrees Fahr. for five hours and then removed, the average number of bacteria per cu. cm. at the end of twenty-four hours was 53,900,000. In each case the temperature of the milk at the end of the fifth hour generally averaged between 63 degrees and 70 degrees Fahr. Fresh milk held at 50 degrees Fahr. contained 4,800 bacteria; when twelve hours old, held at 50 degrees Fahr., it contained 25,000; when twenty-four hours old, 33,000; when thirty-six hours old it had increased to 692,000, with a decided change in the character of some of the germs. Some of the same milk held at 68 degrees Fahr. for six hours contained 47,000 bacteria; at the end of twelve hours this same sample contained 360,000 and at the end of eighteen hours it contained 7,200,000.

I have tried to show some reasons for the leading demands made by boards of health in relation to the production of market milk.

The producer, however, is not the only sinner, and as a general thing, I am inclined to believe that he is the least guilty, although there are some glaring evidences that he should not be wholly free from censure. The miserable, rusty, practically worn-out cans which are furnished by many milk buyers and middle men are responsible for an immense bacteriological count, and at the same time for some of the most serious injuries to the flavor and the keeping qualities of the milk. Our boards of health may well consider this form of contamination and insist that as soon as tin is worn from the cans so that they are not readily cleaned that they be condemned for the purpose of carrying sweet milk.

Some of the epidemics of disease which have been charged to the producer and the cow can readily be traced to the milk peddler. During last December on a certain milk route in the city of Syracuse in our state, seventeen cases of diphtheria had developed. A careful examination of the farms where the milk was produced, of the water supply, and the methods of storage were made and no difficulty found. Closer investigation developed the fact that a case of diphtheria had broken out in the family of the dealer and that the patient had been sent to the hospital.

While a great many milk producers have been saying unkind things in relation to the present system of inspection, the fact that the infant death rate has been reduced in the cities shows clearly that there is a connection between the milk supply and certain diseased conditions and that the inspection is warranted.

As a concrete instance of improved health conditions, the purifications of the milk supply of the city of Rochester has reduced the infant death rate at least forty per cent. No matter how many foolish things are said and done about unqualified or inexperienced inspectors, stable, storehouse and transportation inspection is giving results and is bound to be increased, and the sooner that we, as producers, are willing to accept this fact and to assist the city boards of health to make it more practical and effective the better.

There is one other phase of the clean milk subject which is most important (and our city boards of health would do well to inaugurate a campaign of instruction among the housewives and servant girls in this regard), and that is the proper care of milk after it is delivered. I will cite but one experiment which was made along this line. Milk was purchased from a milkman who dipped his milk from cans on the street, and a careful examination was made of it. Some of this same can of milk was obtained later in the day from a dwelling where it had been purchased and put into an open pitcher. A quantity of the milk was used for breakfast and the pitcher allowed to stand on the table until about ten o'clock, when it was put into the refrigerator. At noon it was taken out and a little more of the milk used and then put back into the refrigerator again. At four o'clock the milk was examined. It gave off a decidedly foul odor, tasted strongly of rotten or water soaked wood, the same odor noticeable in the refrigerator, and contained seventeen hundred times as many bacteria per cu. cm. as it did when the milkman dipped it in the morning, and it was bad enough then.

In this same city milk peddlers report that among the vessels which have been offered to them to pour milk into were old tomato cans, a pitcher which contained about a pint of stale beer (evidently a reminiscence of the night before), a pail which showed the effect of having had eggs carried from the grocery to the dwelling, milk bottles which had not been washed, and from these types of markedly dirty vessels all the way up to something clean and sterile.

One of the most fitting things that our boards could do would be to at once inaugurate an educational campaign and teach the people how to care for milk when they get it from the peddler. The absolute necessity of thoroughly cleansing and sterilizing the cans or bottles, no matter which are used, is obvious; and the fact that milk dipped from an open can on a public thoroughfare on a windy day is bound to be greatly contaminated by street filth should lead every municipality to demand that all milk be delivered in sealed packages. How long could a man deliver consomme or mock-turtle soup from an open can to the residents of Columbus? How many of you would relish succotash that was brought to your door in forty quart lots and a pint or a quart dipped from the top of this can into an uncovered pail and set on the doorstep or hung on a hook on a tree until you were ready to go for it? No other food is handled in such a slovenly manner as dipped milk; and if the consumers will not protect themselves, they should be protected by municipal enactment.

The methods of milk delivery are still primitive and vexatious. The producer is obliged to travel too far to deliver his product, and it is not in as good condition as it should be when the consumer receives it. In a certain city I am told that on one block, a short time ago, seventeen different milk wagons traversed the block and made deliveries.

While it is true that much clean milk goes to the market in cans, the bottle, filled at the farm and securely capped, is the most cleanly and satisfactory way to handle it. The equipment is quite expensive, but the milk which is lost in dipping, together with that which is slopped, will, it is claimed by many producers, pay the cost of the bottles. It should be remembered, however, that unless it is properly cared for the glass bottle may be the most unsanitary method of delivery. Some bottles will come from families where the cleanliness is questionable or where there is disease, and it seems to have been proven that disease germs can be carried in them.

A few years ago, a somewhat noted politician in New York state propounded a famous question: "What are you going to do about it?" I suppose that this is the question that you and I, as producers, have come to now. If the city consumers demand nothing more than is just, and are willing to pay the extra cost of production, there is one of two things for you and me, as milk producers, to do. One is to stop sending to the city. We can make butter, send milk to the creamery or cheese factory, or fatten calves, or sell off our cows. The question is whether this is more profitable and satisfactory than to produce a product along sanitary lines, in which we can take pride and meet this demand. It is wholly a question of cost and price, and as the consumer is demanding a more carefully prepared commodity, which costs more to produce, he must be willing to pay more for it.

For many years some of us who are interested in the dairy business in New York state have maintained that consumers have not been paying anywhere near as much for milk as they were paying for an equal amount of food in other products. Without entering very deeply into this argument, as we have not time to do so, analysis proves that one quart of milk, containing five per cent. butter fat, and costing in the market from five to twelve cents, is equal in food value to five-sixths of a pound of steak, costing from fifteen to twenty cents, and as meats are generally cooked, the milk is far more digestible and the comparative value greater than indicated.

It is fair also to compare the luxuries of life on the basis of their food value as well as their palatability. Peaches and cream seem to be naturally associated together. A pint of cream containing 20 per cent. butter fat is equal in value to four and one-half quarts of peaches; and, while strawberries and cream seem to be intimately associated, a pint of 20 per cent. cream is equal in food value to five quarts of strawberries. I do not mean to advise you to take more cream and less strawberries, but I simply wish to present the thought that it is strawberries that are the expensive item, not the cream; and the two taken together are not a wonderfully expensive luxury. If these combinations of fruit and cream could be used more for dessert purposes, replacing pastry to a great extent, the consumer would gain both in economy and health.

There are five conditions which determine the value of milk for human food. Some may differ with me as to the order in which I give these prominence; but I should place first, the health and the physical condition of the cow; second, the composition of the milk; third, its cleanliness and the cleanliness of the surroundings where produced, which determine the length of time it will remain sweet and palatable; fourth, its flavor, or taste and odor; and fifth, its color and general appearance.

The ideal flavor of milk might perhaps be regarded as a negative rather than a positive flavor. It should be slightly saline and sweet, with no after taste whatever. The color of the milk plays a more important part in getting a good price for a good product than some are willing to admit, and it is affected by the individuality of the cow and the feeding. By selecting for each herd some cows that give a high-colored milk and discarding those which impart too much "sky blue;" by judiciously feeding with succulent foods and alfalfa and clover hay, and if necessary, some roots, one can influence the color to a marked degree.

I presume it will be a long time before we all agree as to the ideal composition of milk for the family use. I breed both registered Holsteins and Jerseys and own a varying number of grades, as I have found by costly experience that it does not pay in the long run to feed costly registered cattle as heavily as I like to feed my producing herds; not that they do not stand heavy feeding for a time, but the time is too short before injury is manifest. For our home milk supply we have always selected a registered Jersey cow, fed her moderately, known that she was free from tubercular or other trouble, and fed the children on such milk. I glanced back through some records a few days ago and found that the average tests of these cows kept for the family cow for sixteen years have been 5.2 per cent. of butter fat. "Too rich for health," says my Holstein breeder friend. Well, such milk has grown three healthy children, all we ever had, and we have paid out less than ten dollars in doctors' bills for them and their mother in the fifteen years. What is one child's meat is another's poison, and I do not advocate feeding all children milk containing 5.2 per cent. of fat. The question of individuality enters into all these matters of digestion and assimilation and you and I as producers must meet the public demand.

In considering the question of cleanliness, we shall also take up the matter of flavor and odor, as they are so closely associated that it is impossible to consider them separately without much repetition. It is probably true that in many stables the conditions are such that it is difficult to secure anything approximating absolute cleanliness of the stable, but most of us can do better than we are doing. The only practical stable for the production of pure milk is one in which the ceiling is tight and smooth, the side walls are tight and smooth, the floor of cement, with gutters and drops all tight and smooth as is consistent.

Some have thought that pasteurization was going to solve all the difficulties regarding our milk supply, but pasteurization, unless more thorough and complete than is usually given in a commercial way, kills only the lactic acid germs which nature placed in the milk as a protection, while the pathological germs, which are really the menace to health, are left in an alkaline instead of an active medium, all ready to multiply when other conditions are favorable. The danger of using pasteurized milk may be far greater than using it when unpasteurized. The fact that this idea of pasteurization has been exploited so greatly at our dairy and other conventions has led many farmers to believe that it is a cure for all evils, and that there was no necessity of their taking better care of their milk at home, since running it through the pasteurizer would eradicate the results of all the sins that they committed.

The silos should be far enough from the stables so that when the silage is thrown down it can be kept outside the stable and brought in for feeding. No more should be thrown down at any time than can be used at that one feeding. The hay should be brought into the stable in such a way that as little dust as possible is raised; and, to get the best-flavored milk, the cow should be fed after milking. It has been stated by some that it was impossible to make a clean-flavored milk when feeding silage. The results seem that if this food is used carefully and judiciously, silage-made milk is preferred by the greater number of consumers. Some of the experiment stations have made tests of this and, so far as I have been able to discover, the results are all favorable.

The Illinois station has perhaps made an experiment which covered more persons than any other one. The dairy herd was divided into two lots, one of which was fed forty pounds of corn silage per cow, while the other lot was fed clover hay and grain. During the course of the experiment sample lots were submitted to 372 persons for an opinion as to any difference in flavor of the two samples, anything objectionable about either and any preference. The results showed that 60 per cent. preferred the milk from cows fed silage and 11 per cent. had no choice. Samples of each kind of milk were sent to experts in the different states, three of whom preferred the silage milk, one the non-silage milk and one had no choice. Silage milk was delivered to a hotel for one month and no complaint was made as to the quality. Allowing silage to stand in the stable seems to affect the flavor of the milk far more than feeding it. All excrement from the animals should also be moved from the stable at least twice a day.

Milk should not be allowed to stand in the stable at all after milking. Professor Russell, of Wisconsin, has made some very interesting experiments in relation to absorption of odors by cold and warm milk. A number of substances having strong odors were placed in contact with the milk, among them being the volatile essential oils of cinnamon, wintergreen and peppermint, also corn silage, manure from horses and urine from cows. The milk was exposed to these odors in a large box, and the results show that while milk absorbs odors when warmer or cooler than the surrounding air, the absorption is much more active when the milk is warm than when it is cold. The odor of peppermint could be detected after a ten-minute exposure. The milk was also readily tainted by the odor of fresh urine. The data obtained in these experiments show conclusively that no man can produce the finest quality of milk when he allows his pails of milk to stand in the stable for some time after it has been drawn from the cow. They also show the necessity of having the stables absolutely clean and well ventilated if we are going to produce the best milk. If simple exposures to these odors so readily contaminate the milk, how about the dirt that clings to the cow's body, which may drop into the pail?

No matter how well all the other requirements be met, if the cow producing milk is not in good health you fail. While the medical fraternity has often charged the cow with responsibility which rests on the dairymen's water supply, she has not always been guiltless, and should be examined regularly as to her health, digestion and general condition. Tuberculosis, tumors, skin diseases and enlarged joints should send the cow to the infirmary, not alone from the standpoint of milk production but because of the general danger of the herd.

While I consider the bacterial count to be far from an ideal method of estimating the value of the best quality of milk, from the fact that it does not distinguish between lactic acid and other bacteria—even the pathological germs, which are those which cause disease—it is probably the best system which we have at present upon which to base our judgment; and it has been proved conclusively that very small particles of dirt falling from the cow's body increase the count enormously.

Paying special attention to cleanliness in every step in the production and care of milk will result not only in clean milk but in a marked reduction in the number of bacteria it contains and will greatly lengthen its keeping qualities. That the desired results may be obtained, care must be constantly exercised. It is of little consequence to practice extreme cleanliness in all of the steps of milk production but one and be filthy about that one, as this spoils the whole. Even if the majority of species of bacteria which ordinarily gain access to milk are not dangerous to health, no one cares to consume milk in which a sediment is found at the bottom if it is allowed to stand for a short time. Frequently much filth is allowed to get into milk during milking, and many milkers practice the filthy habit of keeping the teats wet with milk during the milking process; yet after it is drawn the greatest care is exercised that no dust or dirt gain access to it. So far as the final result is concerned, all painstaking care in the subsequent operations is lost because of the careless work at the beginning during the process of milking; for if filth once gains access in milk, no amount of care afterwards can remedy the difficulty. It is therefore of the greatest importance to the advancement of better dairying that special emphasis be placed upon the operation where milk is liable to receive the most contamination. The results show that the greatest source of contamination in milk as ordinarily produced, is the cow herself; and this is doubly important, because it is the source which is given the least attention in actual practice.

The advantages of using covered pails with small openings are apparent, from the fact, as we have shown, that one of the most prolific sources of contamination is from the cow and stable at the time of milking. When these small topped pails were first introduced into my own stables the men claimed that they could not milk into them; but when one of them was reminded that one of his diversions was milking into the mouth of a cat his objection was readily overcome. One of the most interesting experiments with small top or covered pails was made at the Connecticut station by Conn and Stocking. The milk of one cow was drawn into an ordinary open pail one day and no extra precautions taken to exclude dirt or bacteria. On the alternate day the cow's tail was tied to her leg, the side, flank and udder washed with a three per cent. solution boric acid and wiped with a sterilized cloth. The milker washed his hands with boric acid solution and wiped them with a sterilized cloth. When two teats had been milked the washing of both the cow and the hands of the milker was repeated, and the remainder of the milk was drawn through four layers of sterilized cheese cloth and a layer of absorbent cotton into a sterilized covered pail. In two series of experiments the milk obtained under the extra precautions to prevent contamination contained 267 and 242 bacteria per cu. cm., as compared with averages of 3,888 respectively when no extra precautions were taken. When the two kinds of milk were kept at 70 F., the milk obtained in the ordinary manner curdled on an average in 79 hours, while the cleaner milk did not curdle until the end of 113 hours; at this temperature the average increase of bacteria in twenty-six hours was thirtyfold in ordinary milk where aseptic precautions had been taken.

All utensils used in milking or in handling the milk should be thoroughly sterilized. It is not enough that the pails and cans should be washed, they should be thoroughly scalded with steam or boiling water. In all dairy operations, sal soda or washing powder should be used instead of soap.

Milk produced in accordance with these ideas is bound to be delicious, healthy and invigorating food, but it costs more to make in this way than by the old methods.

Another reason why milk should sell for more money than it has in the past few years is the increased cost of production under ordinary circumstances. In 1897, bran was selling for $14 a ton; in 1907, it has been selling for from $28 to $32 per ton in central New York. Corn has increased from 35 to 40 cents a bushel to 70 and 75 cents a bushel; corn meal from $20 per ton to $30 per ton; oats from 22 to 26 cents a bushel to 60 to 64 cents.

Mr. S. Edwin Thornton, of the United States Department of Agriculture, states that while it cost to feed a cow 17 cents a day in 1897, 22½ cents in 1900, 28 cents in 1904, that it has increased to 35 cents in 1907. He claims that the corresponding value of milk per quart would have been 8 cents in 1897, 10 cents in 1900, 13 cents in 1904, and 16 cents at the present time. In ten years bran has increased 120 to 140 per cent., corn 100 to 120 per cent., oats 140 per cent., and other foods and labor also doubled in the ten years, but the price of milk has not.

Some of our city friends charge the market producers with not being up-to-date and using antique methods in their production. These statements are not wholly true. It is, however, true that many of the barns where cows are kept were built when more general farming was carried on and have been only slightly reconstructed to make them habitable for dairy purposes. In stables of this kind the sins are more largely of omission than of commission, and one of the reasons why the existing conditions maintain is that milk made under these circumstances is taken to the shipping station and brings the same price as that made on the best equipped farm in the vicinity. The only way to remedy this will be by inspection by a corps of men who are qualified not only to inspect but to instruct, and who can give suggestions for improving the conditions without the expenditure of too large sums of money.

The cost of production can very often be reduced by very slightly remodeling this type of stables. In a stable recently visited, taking down the silos and erecting them in a more convenient place decreased the labor cost of the milk about one-sixteenth cent per quart. A like change in the location of the grain bins and mixing room, and the installation of a car for handling the feed reduced the cost one-eighth of a cent more. You say that does not amount to much. In this instance it was $1.50 a day or $270 for the winter. In many stables, installing a practical litter carrier will reduce both the cost of production and the bacterial count of the milk.

We have spoken of the cement floor from the standpoint of cleanliness. It is my opinion that in almost any stable the cost of putting in cement floors and gutters will be repaid within two years in the increased value of the manure produced in the stable. Countless experiments and examinations furnish proof of the correctness of this.

It has been stated repeatedly that one-half the cows which are being kept in the United States are being kept at a loss. If this is true, no manufacturing business in the country is as poorly handled as milk production, because no business would stand the strain of one-half the machines producing no profit, to say nothing of a positive loss.

We became convinced in New York state some 12 years ago that we were keeping too many poor cows, and in our farmers' institute work began a campaign of education. We found that the average milk production of the cows of the state was 3,000 pounds and the butter production 127 pounds. In season and out of season we urged the necessity of better cows, better feed, better breeds and better care. Everyone interested in our agriculture got the habit. At one institute a good old Scotch minister was opening the meeting with prayer and in the course of his remarks fervently asked that those farmers in the locality, who had not yet been touched by the spirit of progression and who were still feeding their cows as Noah fed his, be impressed with the necessity of education along these lines and that their hearts be moved to bring them out to hear these lectures. Everyone was interested. Cows were brought to the meetings and used instead of charts to impress people more particularly. Ten years later the returns show that, owing largely to this campaign, our average cow in New York was giving 4,600 pounds of milk and could make 185 pounds of butter, an average gain of 65 per cent. If the average cow of twelve years ago was worth $35, and she gave 3,000 pounds of milk, how much was the average cow of two years ago worth, which was giving 4,600 pounds of milk, and how much is the best cow in your barn worth? Figure this out and write me a letter. This is probably the most fertile field in which to work to reduce the cost. Weighing the milk from each cow regularly, week in and week out, and keeping an accurate record is the basis on which to begin operations.

How many of us save large sums by being more careful in our feeding? In many a stable more pounds of feed are given an individual cow than she can pay for. The food limit should be governed by the ability of the cow to give a profit on what she is eating. On farms where the conditions are such that the soiling system can be adopted successfully, it is probable that the cost of milk can be reduced to a marked degree, but the number of such farms is limited.

I trust that none of you will get the idea that I want all of the market milk made equal in quality to certified milk. I am inclined to believe that the average consumer is getting just as good a product as he is willing to pay for, and I am thoroughly convinced that he cannot have this better milk that I speak of unless the producer is paid more for it. We, as market producers, must bear in mind that the world is moving rapidly, that yesterday's methods will not bring success in today's work. The public is demanding a better product; they are entitled to it; they must and will have it, but it is going to cost more and they must meet the producers half-way and be willing to pay the cost.

PRES. J. D. NICHOLS: We have been in session quite awhile, and yet it was necessary in order to complete the work which we have on hand. I am very sure that you have enjoyed the papers that have been presented this afternoon. They contain so much of value to the dairymen that I feel those who have missed the afternoon session have lost some very valuable suggestions.

I want to call your attention to the fact that in the morning we elect officers for the ensuing year, and I trust that we shall have a full attendance of the association.

The election of officers for this association is a matter that you should be just as much interested in as any of the other proceedings of the convention.

If there is no further business to come before this meeting we will stand adjourned to meet in this chapel tomorrow morning at 9:00 a. m.

PROCEEDINGS OF THE OHIO DAIRYMEN'S ASSOCIATION HELD AT THE GREAT SOUTHERN HOTEL, THURSDAY EVENING.

The banquet at the Great Southern Hotel took place on Thursday evening, February 13th, 1908. The attendance at the banquet was the largest in the history of the Association. It was a very enjoyable time and lasted until midnight. After a full discussion of the menu, the president, J. D. Nichols, called the assembly to order in the following words:

It is very seldom that it happens in a man's life that his heart is at the same time filled with sadness and gladness. My heart is filled with gladness because this has been the best attended convention that the Ohio State Dairymen have had since my connection with it. My heart is filled with gladness because we have the honor and pleasure of entertaining, as our guest, the best governor of the best State in the best nation of the world.

My heart is filled with sadness because the dairymen are about to face strict sanitary regulations laid down by the State Board of Health, and yet the saddest thing I have to do to the dairymen asembled here is to turn you over to the tender mercies of the toastmaster, Mr. W. W. Marple.

Mr. W. W. Marple, Toastmaster: I think that I understand the duties of a toastmaster to some extent, and if I do not get mixed up in this program, on account of the many changes, I will be all right. I have been coached pretty thoroughly by the president and the secretary as to what I have to say. After listening to some very interesting lectures today on dairying we have come together this evening to exchange confidences. I shall not take up any more of your time, but will introduce to you the first speaker of the evening. I am sure that we are all delighted to have with us this evening the governor of this great State. I am sure that we all appreciate his visit to our Association I take great pleasure in introducing to you Governor A. L. Harris.

THE OLD DASH CHURN.

Gov. Harris:

Mr. Toastmaster, Ladies and Gentlemen and Members of the State Dairy Association: You do not know how anxious I have been for the last two days to think of something I might say on this occasion. I did not know what my subject was to be, but I supposed it was something along the line of your association work. I was anxious to see the program tonight, and you can imagine how much relieved I was when I picked up the program and found that my subject was "The Old Dash Churn." It brings me back to the days of my childhood. I do not know who is responsible for this selection, but I am inclined to think that my friend Bailey is responsible for it. When the committee invited me to come over and meet you and greet you I tried my best to get excused. I could not get excused, so I came over, and I am glad I came because I always like good company.

There was no intimation, however, from the committee as to my speech, so that I am telling you the truth when I say I did not know what my subject was to be. The subject takes me back to the days of my childhood, which was not so long ago. I remember very well when a boy we dairied in the old-fashioned way and it was not like you do it now. I had my number of cows to milk night and morning. How I did wish I was a man, so that I would be too big to milk cows. We milked in the old-fashioned way and strained away the milk in the old-fashioned strainer bucket. We had the old-fashioned milk pans all sitting in a row and you filled each one with milk, until the entire milking was set in the spring house. It was then left there for the cream to raise, and then when the time came for skimming the cream, how I would stick my finger in my mouth.

Then the cream was left in the jar until it was ready for the churn. This subject carries me back to the days of my boyhood, which was not so long ago. I was happier then than I am now. I got tickled with a rod sometimes when I did not do what I was told to do, but I would rather have that than some of the tickling I get now. The old dash churn was made of cedar staves with bright hoops on it. I remember, too, when that cream was put into the churn. I remember how I was ordered to take hold and how quickly I did because I feared that switch. I remember, too, how long it would be before that butter would come. Sometimes the cream was too cold, and the longer I churned the further away the butter seemed to be, but it made no difference, as my time was not valuable. But I kept on working until the butter would hold up the dash, and then the churning was over. Then my mother would take out the butter and put it into a bowl and tell me to work the milk out of it.

When I would call mother to see it she would say I must work it again with the old butter ladle. How relieved I was when she said I could now work the salt into the butter, and that took as long as the other. But after all, there was some compensation, because after the churning was done my mother used to tell me I might go out and pull weeds out of the onions.

That was almost as distasteful to me as the churning. Now I look back at those old days and compare them with the modern churn and the dairy machinery and the science used in separating the cream from the milk and the butter from the cream, and there is no pleasure in it; and you young men can hardly appreciate it, as I do, the difference between the old and the new. There is some consolation in going back to the scenes of my childhood. I am going to thank Mr. Bailey, if he is responsible, for suggesting the old dash churn as my subject. I am reminded that there are others to follow on this program, and therefore I shall bid good bye to the old dash churn; it is a subject that is worthy of consideration and you younger men will appreciate hearing we old fellows tell about it.

I thank you for the opportunity of meeting with you and for the opportunity of telling of my boyhood days. I am glad to greet you tonight in the most successful convention you have ever held since your organization began. I see there are ladies present tonight, and I am glad to see that. I think if you have more ladies and fewer cigars you will have better banquets. I think if the ladies partake of the banquet it will make your association still better.

I thank you for your attention.

A FEW THINGS IN MILK.

BY PROF. OSCAR ERF.

It certainly gives me great pleasure to be with you on this occasion. I always feel at home in a dairymen's meeting. I see by the program that the printer has evidently made a mistake in the printing of my subject. In the few words that I have to say I want to call your attention to the dairy business in this state. I really think it is the coming industry in Ohio. I heard a scientist say that the most conservative plan, the best way you can conserve the fertility of the soil and bring prosperity to the people is by dairying to produce milk. He tells us that approximately from 80 to 90 per cent. of the fertility that is fed to the cow is returned back again to the soil. This one fact, if true, will prove the point I am trying to make, that dairying is one of the best means of bringing prosperity to our country.

It was my privilege this summer to go abroad and visit foreign countries. I first landed on the shores of Africa. I found no dairies and no milk produced, and I found but little civilization. I then went to Italy. I found a little more milk produced there, but I found but little prosperity. I found that land was not worth much. I then went up to Switzerland, where dairying is carried on very extensively and by the most approved methods, and I found that land up there was worth from six hundred to fifteen hundred dollars per acre. I went up the Rhine and landed in Holland, where dairying has reached a very high state of perfection, and I found land up there worth two thousand dollars an acre. I asked a gentleman what makes this land so valuable, and he said the Holstein cow. I went to the Isle of Jersey and found on that barren island land worth seven hundred dollars per acre, and I asked a gentleman what makes this land so valuable, and he said the Jersey cow.

Now the investment in anything depends upon the income as to what the real value ultimately is worth. Suppopse you invest in a factory ten thousand dollars and you expect to realize six per cent. on your investment. At the end of the year you have made twelve per cent. That simply means that you will double your stock; instead of having a factory worth ten thousand dollars you will have a factory worth twenty thousand dollars. In the same way the dairy cow has increased the value of land in that country. I come over to this country and find that once upon a time on the New England shores land was rich, but now it is poor and worth from five to six dollars per acre. I find many abandoned farms in that section. I find again in some sections of New York, land worth $500 per acre, and not so many miles away I find land is scarcely worth anything. I ask what makes this difference, and they tell me it is the dairy cow and the production of milk. You know very well, some of you, the conditions of the northeastern part of our own state, that land up there which was not fertile some years ago is now valuable, because of the dairy business. You know the same conditions exist in the northwestern part of this state.

The land has been so extensively cultivated that the soil was exhausted, and it is now being restored to its original fertility. The dairy business is one thing that brings prosperity to a country. I noticed that in some of the countries that I visited when I was abroad and I want to make this statement, that wherever you find the milk and dairy business carried on prosperously in a country, there you will find civilization; where you find a country in which milk is used in extensive quantities, there you will find the most modern civilization. Among the Turks and Romans and Spaniards you will find very little milk used, and you will find very little civilization.

Take England, Ireland, Denmark, Sweden, Switzerland and Germany and you will find dairying practiced largely, and there you will find the highest type of civilization. I want you, as dairymen, to promote this cause, because I believe it is the coming industry in this country. I have already taken up more time than I expected and will give way to other speakers. I thank you for your attention.

C. B. LANE.

I heard the toastmaster say this program was turned wrong side up and inside out. There is one thing I promise you, and that is I will not show you any pictures. You know your president is uneasy about the pictures I show. This dairy business is worthy of the best thought you can give it. It is worthy of the study of the best brains we have. It occupies a very high place in the wealth production of our country. The income of the dairy cow is second only to that of the corn crop. The dairy cow is the only animal in the world that will give a large profit on high-priced land.

You have heard Prof. Erf say that the dairy cow has increased the price of land. When we stop to think about it, the dairy cow is one of the most permanent sources of wealth. We have mines which produce their wealth, but the soil is the source of our future supply. Our forests will be cut down in a few years and the iron ore and coal taken out in the next fifty years, so that the soil remains as the most permanent source of our wealth. I think it is the best thing we can do, to stick to the soil, to remain on the old farm. If you have boys, train them up on the farm. You will notice that when times are hard and the crops fail, the farmer turns to dairying. He does this because he is sure of ready money and sure of profits.

It has been predicted that during the next sixty years we shall have a population of two hundred millions of people, and the soil is going to give these people occupations and give them their food.

Things are changing along dairy lines. Take New York for instance; their milk bill is forty-four million dollars per year. As we increase in population two things must happen. Present farms must produce larger, or abandoned farms must be occupied and produce dairy products. Our cities are certainly drawing supplies from sources that formerly went to the creamery and the cheese factory. It is predicted that in a few years we will have to import butter and cheese instead of exporting them. I know your president thinks I rubbed it in on the dairymen, but I want to say something about the consumer. He is very largely at fault in this matter of pure milk supply. By way of illustration: I live in the suburbs of Washington. There is a little dairy out there of five or six cows. They are kept in a small stable and they never clean them, and we know by analysis that the milk is absolutely filthy. Our people buy it, because they say it is right fresh from the dairy.

If consumers accept such milk they are encouraging the sale of unclean milk, and that is why I say the consumer is very largely at fault in this matter. I have hope of the dairymen. I know they will do the best they can to give our people a clean and pure milk product. If you want to encourage this industry, do all you can to enforce strict sanitary laws. Stand with the Ohio Dairymen's Association for a higher standard and a clean and pure milk product.

I thank you for your attention.

WOLVES.

BY D. A. CROWNER.

There is something about sanitary milk that reminds me of my childhood days. What are we trying to do, talking about sanitary milk? Is it true that we are going back to the days of our grandmothers? Are we not trying to produce the same milk that she produced? The cow ate the nice green pasture, and your grandmother in her clean dress and with a clean apron on, milked the milk in a clean bucket that had been in the sun for twelve hours. You got pure milk because you got it under the best conditions. They kept only a few cows and they had a wide range to go over. They would keep one cow on a hundred acres, but now they try to keep a hundred cows on one acre.

The cow in the present dairy is kept in a barn and fed in a barn. We have gone to the other extreme and we must devise means to keep the sanitary conditions right. All that the sanitary codes ask for is that the milk shall be pure and clean. You may talk about pasteurizing milk and cooling milk, but you must have clean milk to begin with, or you will not have a clean and pure product. There is something else encouraging about the milk business. Have you ever thought how many queens have gone out from Holland, a country in which you find dairying carried on to a high degree of perfection? Have you ever thought why this country produced so many queens? It is because a dairy farm is a good place to get a good wife.

The best men of Europe thought the same way about this matter, and that is why they went there to get their wives. I wanted to call your attention to the times now and the conditions in the times of your fathers and mothers. I can remember the time when we did not milk in a barn. It does me good to see so many here at this association; I remember when there were only nine members here. I was a student in the university then. I remember some of the old men who were with us there. How glad I was today to sit and listen to Bentley. I wish I could see Judge Bradbury here. Hunt was here then, and Bailey is here tonight. We were small in number then and had no money. The only way we could get a meeting was to switch it in with some agricultural meeting.

By and by we got a little money and that helped us. Then the manufacturers of dairy apparatus helped us. They have put their money back of this organization and made it a success. I want you to remember these men when you come to buy your apparatus. I am glad to be here tonight and thank you for your attention.

FRIENDS.

BY L. P. BAILEY.

I am sorry the governor could not remain with us during the entire program tonight. Like the governor, I can go back to those early days, and they recall many pleasant recollections. I can remember the old times when we had the husking bee. I am going to tell you something about this husking bee.

The corn was divided into two long piles and the huskers were arranged on either side. It was a very exciting time, but the most interesting part was that when a boy found a red ear it gave him the right to kiss the girl of his choice. Then again we had the old-fashioned apple cuttings and the many delightful songs we would sing. You may talk about your strawberries and ice cream, but they are nothing to the inspiration of those old songs of the early days. I want to speak a few words about our friends. We cannot afford to be without friends. I attended a fair in West Virginia some years ago in which I was exhibiting some thoroughbred dairy cattle. I met a newspaper man who said, "Give me an advertisement and it will do you good." I put an "ad." in that paper and it brought me several inquiries for stock. This man afterward recommended my milk to a man in Pittsburg, who purchased my product for twenty years. That is how this friend helped me start in the dairy business. We cannot afford to lose our friends.

I remember again of selling a cow to a man for $100, that afterward became lame; and as I wanted to be fair, I made that right with him. That man sent me many a buyer for my cows. It paid me to make a friend of him instead of an enemy, by treating him fairly. You cannot afford to lose your friends. A mother said to her boy, "I want you to make your sister happy while I am away." When she came back and asked him about it, he said, "I made myself happy by trying to make her happy." If you give every man a square deal you will make yourself happy.

You know the man who put his arm around the neck of John B. Gough and encouraged him to reform was the means of bringing blessings to millions of people The world would never have listened to that famous orator if it had not been for the kindly act of that man. It pays to make friends as you go through this world. I would not exchange the friendship I have made in this world for all the wealth that it contains. I might go on at length and tell you of the great value of friends, but the hour is growing late, and I will give way to others.

I thank you for your attention.

"REAL."

BY MR. REHL.

As I was coming up to the banquet hall someone said to me, "We will hear you Rehl tonight." I said, "I expect you will see me reel." So I have taken hold of a chair to prevent it. It is sometimes difficult to tell about the real things. When I was in college I once attended a convention and took a seat in the gallery facing the platform. The president saw me and said to the boys up there: "Throw that fellow down and do not let him stand on a chair." I was not to blame for I was *really* that high. I remember when I was in the Ohio State University, and we needed some equipment in the dairy department, we went to the legislature and asked for it and got it. We had a little jollification over it, but when the law was handed to the governor he vetoed it. Then we held an indignation meeting, but finally we secured recognition. We had an ideal as to what the dairy department ought to be and would be. In order to get a *real* thing, you must first have an ideal.

We had an ideal many years ago as to what this association was to be, and that ideal has now become the *real*. We had an ideal of splendid buildings on the university grounds for the instruction in dairying, and now those ideals have become *real* buildings, and we are proud of them. I hope we will strive to make our ideals more and more *real*. I am sure that we are all proud of the Ohio Dairymen's Association, and the great good it has accomplished. I thank you for your attention.

MANILA.

BY HARPER DEWEY.

I promise you to be very brief because it is nearly midnight. Why my subject should be Manila is more than I can tell. You all remember the famous battle that took place and you all remember the famous command of Dewey on that occasion when he said to his officer, "When you are ready, you may fire." You all remember, too, the result of that memorable battle. On this occasion I may say I am not ready to fire. His guns were loaded, but my guns are not loaded. I want to say to you that this is the fifth convention of this kind I have attended this winter, and I can truly say this is one of the most delighful occasions I have ever enjoyed. Manila shall have but little to do with what I have to say. Dewey was a man of war and I am a man of peace. I do not believe either in controversy or war. I believe in thorough good fellowship, such as we have here tonight. I like the man who is kind and willing to receive me into his fellowship. I am not a dairyman, creamery man or a butter maker. I am a commercial traveler. I am going around for the sole purpose of doing you good. I am very glad to be able to enjoy this delightful occasion with you. I trust that this meeting wil be productive of great good and that you will go back to your homes with renewed zeal and energy.

I thank you for your attention.

PROCEEDINGS OF THE OHIO DAIRYMEN'S ASSOCIATION HELD AT THE OHIO STATE UNIVERSITY FRIDAY MORNNG.

Friday morning February 14, 1908. The session was called to order in the University chapel by the president, J. D. Nichols, who said:

I want to say that to my mind there should be some changes in our associations. I do not mean a change in the officers, but I mean a change in the board of directors. I think the State should be more thoroughly covered by the board of directors, and that would have a tendency to bring more people to our meetings. I think we should have a board of seven members instead of five members. If this meets your approval I shall be glad to entertain a motion to that effect.

On motion it was voted to increase the board of directors from five members to seven members.

The next business in order is the nomination and election of a president. We are ready to hear nominations for this office.

C. A. Pontius: I want to nominate as president of this association our present and very efficient officer, Mr. J. D. Nichols, of Cleveland, and I move the nomination be closed and that we elect by acclamation.

Thereupon the motion prevailed and J. D. Nichols was duly elected.

Pres. J. D. Nichols: I appreciate the confidence you place in me and can only say I will do in the future as I have in the past—give you my time and my money to further the interests of the Ohio State Dairy Association. While I am not grieving for the office, and my business needs my time, I am willing to serve you as best I can, and hope to have your hearty support.

PRES. J. D. NICHOLS: The next thing in order is the election of a secretary. We are ready to hear nominations.

On motion the rules were suspended and the nomination and election of E. S. Guthrie was made unanimous.

PRES. J. D. NICHOLS: The next officer to elect is a vice-president. Who will you have for that office?

On motion the rules were suspended and the nomination and election of J. O. Winter was made unanimous.

PRES. J. D. NICHOLS: We will now proceed to the nomination of a board of directors, which shall consist of seven men to be chosen by ballot.

The following gentlemen were nominated: E. W. Hoyt, Columbus; A. S. Neal, Macedonia; M. L. Carpenter, Wellington; L. S. Condit, Condit; Oscar Erf, Columbus; L. P. Bailey, Tacoma; E. S. Rice, Lockwood; J. T. Bentley, Circleville; J. E. White, Greenfield; J. O. Worly, Morrow; J. M. Willis, Washington C. H.; C. A. Pontius, Canton.

A ballot being taken resulted in the election of the following board of directors. L. P. Bailey, Tacoma; E. W. Hoyt, Columbus; A. S. Neal, Macedonia; Oscar Erf, Columbus; E. S. Rice, Lockwood; J. E. White, Greenfield; C. A. Pontius, Canton.

PRES. J. D. NICHOLS: It has been said that our constitution is a little out of date and for fear we get into a rut, it might be well to have a committee on revision of the constitution. This committee might get together and report a year hence on this matter. What is your pleasure is regard to it?

MR. HERRICK: I move that the chair appoint a committee of three to revise the constitution and report at our next annual meeting.

Thereupon the motion prevailed.

The president appointed the following committee on revision of the constitution: Austin Herrick, Quinsburg; L. P. Bailey, Tacoma; E. S. Guthrie, Columbus.

MR. HERRICK: I have been very much interested in this meeting, but I want to say a few words. I think we should have more of open discussion in our program for next year. I saw a man here yesterday that I would like to hear from. We are not here for the purpose of oratory. I come here to find out how to dairy better and cheaper. I think it is proper that all these various points in our business should be discussed in our meetings. Let us have it that way in our next meeting. I think such a plan would meet with the apprvoal of our association.

THE COW'S DAILY WORK.

BY Z. O. WORLEY, MORROW, O.

I very much regret that we did not get to hear Prof. C. D. Smith talk yesterday along this line which has been assigned to me. Although we did not get to hear him, we will hear a report from him later on. The cow's daily work and the individuality of the cow are closely allied. Upon the cow's individuality or daily work depends the success or the failure of the dairy business. I am going to talk to you on the daily work of the cow. I presume that the large number of dairymen here are pretty well versed in the school of experience. What do we know about the cow's daily work? What knowledge have we of the individuality of each cow's work? Have we the knowledge that we would like to have? Have we the knowledge that we ought to have in that line of our business? If we have not, how are we going to get it? We have the Babcock test and the scales, the only reliable sources at the present time. I have sometimes heard it said among dairymen that it is too much bother to use these tests and they cannot do it. How much time does it take to do this work? It takes about ten seconds to weigh and record the weight of each cow's milk. That would be about two hours in a year for each cow. If we are not willing to devote two hours of time in a year to find out the individuality of each cow we are neglecting a very important factor in our work. By this small amount of time spent we can find out the number of pounds of milk and butter fat that each cow is producing. We not only find this out, but we are able by this test to keep tab on the different kinds of feed that we are using. Not only this, but we are able to ascertain the results of weather changes and other conditions that we attribute to one cause or another. If we do not have a knowledge of the cause of waste. If we follow these tests we have a clear knowledge of he daily work of the cow throughout the year. I find it creates an interest among the boys, because they are able by this means to grade the cows and to know what each one is doing. If you take interest enough to keep the weights, I venture to say that nine out of ten of the hired men will take more interest in your work. If you are careless they will be careless, but if you keep the weights they will all take more interest in the work. Very many of your men will take a pride in keeping their stables up to the record, and it awakens an interest among all. At the end of the year you will find that your men will take an interest in knowing the weights of the milk produced from your stables. Of course, the owner's interest in this matter is larger than anyone else's, but the hired man wants to know how his cows came out. I get better returns by doing this, and I believe you will agree with me if you adopt the same plan.

You will find that there is quite a variation in the daily work of the cow during the year. I find it so in my herd. I keep Jersey cows in my herd. That is my line of cattle, and I am giving you the results of my experience. I have two cows in my herd that the tests show are not doing what they ought to do. I do not think these two cows will be in my report next year. I do not keep these cows for their company. If I have a cow in my herd that does not make expenses, she must leave the herd. I know of no way to get at this but the tests and the scales. I have a neighbor that came to my place and said, "I will start the test some of these days." He came there when I was making a seven days' composite test. I said to him, "How much time are you willing to devote to it?" And he said he was willing to give the necessary time. I gave him a machine, showed him how to use it, and he took it home and tried it for seven days. Now he is going right on for the whole year.

We sell by the butter fat test, but you do not find among dairymen interest enough to look after their business. They are not doing their work on a scientific plan and cannot hope for the best results. By this composite test, when you are selling to the creamery you know whether you are getting your own or not. We know at all times what our herd tests. The one-day test does not prove the facts. It takes a longer time to do it properly. I have tested a cow at different times and under different conditions, and the same cow will show a difference of one per cent. That is why I say you must take longer time for the tests if they are to mean anything to you. I am sure that the knowledge that is being gained here in the university along these lines, and with the assistance of the agricultural department of this university, will help make the grand state of Ohio stand at the head of the list in the dairy business.

RECORD OF Z. O. WORLEY'S HERD 1907.

Value of product figured on a 4% basis of butter fat. Dec. to April 12c.,35c. per lb. of butter fat; April to Aug. 10c., 29c. per lb. butter fat; Aug. to Dec. 11c., 32c. per lb. butter fat.

Cow No.	Test	Wt. of Milk.	Value.	Lbs. Butter Fat
3	4.6	6,346	$93 28	340.50
4	4.8	7,283	112 16	407.75
5	4.6	6,980	102 60	374.50
6	4.2	6,369	85 34	312.00
7	4.7	5,384	80 75	294.00
8	4.6	7,020	103 19	376.75
9	4.3	5,566	76 81	279.25
10	5.1	6,216	101 32	369.75
12	5.3	5,159	87 69	319.00
13	4.5	4,862	70 01	255.25
15	4.8	4,295	66 14	240.75
16	4.8	6,067	93 43	339.75
18	4.1	6,031	79 00	288.50
20	4.4	6,108	86 12	313.50
21	4.0	9,039	115 70	421.75
Average....	....	6,182	90.24	329.00
*Best cow .	....	....	$115 70	421.75
*Poorest...	....	....	66 14	240.75
Difference .	....	....	49 56	181.00

Cost of keep per cow per year, $50.00; per day, 18c. for 200 days; per day, 8½c. for 165 days. Calculation based on the following prices: Ensilage, $2.00 per ton; hay, $12.00 per ton; fodder, $4,00 per ton; Union Grains, $25.00 per ton.

*Cost of feed per cow was practically the same.

BY BERT SMITH, DELAWARE, O.

Winner of First Place in the Milk Contest.

I feel kindly toward the chairman for selecting the subject he did for me, because he knew that a dairyman's vocabulary is limited. You know a dairyman spends about all of his time talking to the cows. I will endeavor to tell you why I went into the dairy business. I live on the west bank of the Olentangy river and thought it would be a good place for a dairy farm. So I started in to follow that line of business. The first herd of cows I bought, as a money-making proposition, was a failure. Some of them were black and some of them were red and some of them were just cows. I then got the idea to try Jersey cows, but it was not very profitable for me; then a few more scales fell from my eyes. I then went into the business of registered cows. I thought I would have the satisfaction of knowing that I had good stock. I paid good prices, and the result was that in 1906 I got $85 for the butter fat alone, not counting the calves or the fertility of the soil.

My fields were poor, and when I told my friends I would sow rye and try top-dressing, they said: "Smith, you would better go visiting, as it will not catch." I sowed it, however, and top-dressed it. I took up a barn floor and found some of the old original chaff and put it on, and it gave far better results than the manure in the open lots. I now have a covered shed for the manure. I will tell you something about the way I take care of milk. Our barns have cement floors. We milk our milk through covered pails and it is taken into the cream room, passed through an aerator and then passed through until the cooling is finished, and then it is put away. In the matter of taking care of cream and milk, if we have gained anything, I give the credit to Prof. Decker.

I have given the feed question a great deal of thought, as this is very important in figuring the profits in the dairy business. I believe that is all I have to say, and I thank you for listening patiently to me.

BY MR. J. E. DAWLEY.

I have nothing written and I simply want to talk to you. I was much encouraged when I heard what Smith had to say about his farm, and when he spoke of his work in the beginning on that farm, I thought it would make a good illustration of the abandoned farms in New York. I believe that was spoken of at the banquet, and I once heard that there were many abandoned farms down there. I went down in that section, and after driving a half day I saw no abandoned farms. So we went on a half mile further and found a farm in bad shape. On this farm, which I thought might be an abandoned farm, I saw a tree of nice apples. So I thought I might go over and get some of those apples. About the time I got after the apples a fellow came out and said: "I pay three hundred dollars a year for this farm, and all I get is the grain, hay and apples." As soon as you can get a little acidity out of the soil and can sow alfalfa we can grow a profitable crop. The object in growing alfalfa is not for a greater number of pounds, but to reduce your labor to a minimum. It seems to me that any dairy farmer ought to be interested in any crop that will give him so large an amount of protein as you get in a ton of wheat bran, and that is what we are doing in New York. The conditions will vary, of course, on the different farms. One of the first cardinal points is to get a catch, and in order to do this, you must get sufficient humus to make it catch. You must have a spongy condition of soil. The next thing you must have is inoculation. I said to my people in New York: "Go to the nearest alfalfa field and get soil for inoculation."

I have 1,200 lots and have sent them out in varying sizes from a package to a ton. Of the twelve hundred lots sent out, 90 per cent. of them have been successful. Many of the farmers have found it necessary to inoculate. If you have tried alfalfa, it is my opinion, if you have a field with nodules on the roots and let your neighbor have it, it will inoculate. Do not think because the field is growing nicely that you have inoculation, because it will stay in the ground several years and not inoculate. Be sure you have the nodules on the roots. Our next trouble is to get acidity out of the soil. We use small quantities of lime—about thirty pounds to the acre. You can test the acidity of your soil by using litmus paper. In our section, the smaller the quantity of lime we can use the better. We only want to correct the acidity in our soil. There are many other sections where you cannot grow alfalfa, because the water level comes too close to the surface. Deep subsoil drainage seems to be necessary to get a good growth of alfalfa. It must be well drained with good tile drainage. If you have a spring in your field it is my opinion that you will have trouble. I think the alfalfa roots will clog your tile. I took up twenty-two rods of tile and found a rope of alfalfa roots that filled the drain. I shall be glad to answer any questions.

QUESTION: Are there any sections where you cannot grow it?

ANSWER: Yes, sir, there are certain sections of New York where the ground is very fertile and the water conditions are such that you cannot grow it.

QUESTION: What is the best method of getting the lime spread over the ground?

ANSWER: I find the spreading of lime one of the meanest things we have to do. We use slack lime and spread it with a manure spreader with the gear set to run slowly. Some people have lime spreaders or plaster sowers. I think they are hard on horses.

QUESTION: Do you slack the lime yourself before you use it?

ANSWER: Yes, sir, we slack it with water.

QUESTION: Is it possible to inoculate ground by sowing it?

ANSWER: Yes, you can inoculate by sowing alfalfa seed. If you sow the seed with nodules it will inoculate the ground.

QUESTION: Have you ever tried ground limestone to sow on your land?

ANSWER: I have never tried it. It may be suited to Ohio conditions. We cannot use ground limestone or raw lime. I think there would be difficulty in sowing it.

QUESTION: Is it necessary to inoculate land to get a good stand of clover?

ANSWER: Yes, sir, it is demonstrated that the bacteria thriving on sweet clover and alfalfa are the same. So in Dutch clover; they are all the same. Of course, this is a close question, because I think there is a difference between the red clover and the alfalfa.

QUESTION: Will alfalfa grow on land where the limestone comes close to the surface?

ANSWER: Yes, if you can get a catch and the season is favorable. It is liable to be injured by the drought, but it will grow if the roots can get through and you can get a good catch. You can tell where it is getting through by the greener growth.

QUESTION: Will alfalfa follow a drain and clog it up?

ANSWER: Yes, if it has water in it I think it is liable to follow the drain and fill it up.

QUESTION: What is the best time of the year to sow alfalfa?

ANSWER: If the field is free from weeds, I mean pretty thoroughly clean, it is my opinion that you get the best results to sow it about the same time you sow oats. We get better results in New York by sowing it at that time. If you have a field that is very weedy I would lose one year and get the weeds out of the way. For two years I have cultivated a field in order to get it clean before sowing alfalfa on that field.

MR. RICE: I feel that to us dairymen in Ohio, it is a vital question as to whether under draining will keep alfalfa from heaving up. I sowed an acre a year ago. I sowed it in July and had no nurse crop. It grew until October, and I went out and cut it very close, getting two tons per acre. It was very fine feed, but the cold winter came on and it was bare, and in the spring it was all frozen out except through the middle where there was an under drain, and right over that the alfalfa was protected. I sowed it the twentieth of July this year, and I also sowed buckwheat. I dragged it in. I got about ten bushels of buckwheat, and the alfalfa was there and it came all right. I got a very nice catch. Before winter I top dressed it with manure. This is clay ground that I am talking about.

ANSWER: There is no doubt that the tile drainage, with the winter conditions as they were last year, saved that alfalfa. In our State we have more snow in the winter, which protects our alfalfa. I am confident that drainage is a good thing.

QUESTION: Would ground covered with manure from cattle fed on alfalfa give you inoculation?

ANSWER: Yes, sir, I think it is true that alfalfa hay manure would inoculate the ground. I think there is a case reported from Massachusetts where cows fed on alfalfa hay, that they had a catch, and it was the first time they ever did have a catch of alfalfa.

QUESTION: I would like to know the difference between the different varieties of alfalfa.

ANSWER: Some of the varieties are more climate resisting than others. I think there is about the same difference there is in the different varieties of wheat. I think it is a good thing to experiment with different seeds. The seeds we are getting from Utah give us the best results.

QUESTION: I have a field in which the alfalfa is choked out in places. What would you do with that?

ANSWER: You can patch it. I have had some experience along this line. We have some trouble with orchard grass. We have all over our sections of country fields such as you describe. My experience is that orchard grass will run alfalfa out. I am no friend to orchard grass.

QUESTION: Have you had any experience with sweet clover in the alfalfa field? Have you had any experience with seed that is not clean?

ANSWER: I have had some experience where there was about half a stand of sweet clover. I wish it was not wrong to shoot seedsmen. I feel that one of the most iniquitous things is the seedsman. You go to him and tell him what you want and pay him for it, and then you will find a printed slip on your seed package saying that he is not responsible for the purity of the seed. How would you like to sell milk that way? You often find that alfalfa is adulterated with sweet clover or with other kinds of seeds.

MR. DUNLAP: I have been growing alfalfa for ten years. I have had some experience in this business. I do not grow any crop on the farm that I think more of than I do of alfalfa; yet there are drawbacks on my farm that have not been mentioned here today. In the question of seed I have been defrauded the same as you have been, but I was not quite so fortunate as some of you, for I got red clover and weed seed. The seed that I have bought for the last few years is grown in Logan County. I have never been able to get as good a crop as they do in that county. I have the best success in sowing alfalfa in June. I have the best success without a nurse crop. I would not sow it on a field where the water was near the surface or stood during the year. I find that there is no crop that will respond as well to manure as alfalfa. I have had some trouble with weeds and foxtail and lady-finger grasses. One year I tried the experiment of putting stock on a field and it was successful. Stock seemed to injure the weed seed, but not the alfalfa. Ihave had considerable difficulty in breaking alfalfa sod. When you undertake to break it up for some other crop you are likely to lose your religion. If your plow will cut the roots you can do it. I have never found a better fertilizer than alfalfa. A few years ago I had clover on one side and alfalfa on the other, and the alfalfa is better. In regard to feed there is no better crop than alfalfa. They used to tell me that horses would leave corn for alfalfa, but I did not believe them. The greatest difficulty I find is to cure it, especially the first crop when there is much rain. Of course, we have the same trouble with any other crop. I have cut it five times in one year, but generally three times. I have had no trouble in drainage. I never used inoculation, though I have no doubt it is necessary.

MR. DAWLEY: I want to testify to the value of top dressing. I think top dressing is a very valuable thing. One other point is quite important, and that is the first crop. I believe that all have trouble with the first crop. In central New York we cut it when it is ready, whether rain or not. If it is wet we put it in the silo. If it is not raining we cure it in the regular way. We have sixty-five acres of it. If you wet your hay it will keep. If you do not cut your alfalfa until it goes to blossom it will hurt it. There is another hint I want to throw out in regard to the pasture, and that is that your animals are likely to bloat if pastured on it. That has been my experience in turning into an alfalfa field. Now in regard to the heavy sod. I remember a man coming to me a few years ago and said, "How will I break that sod?" I said, "Why do you want to break it? It gives you five or six tons to the acre. If you must break it you should have a knife coulter made and turned up about four inches and fasten it in the frame of your plow. You can have it made by your blacksmith. It will do your work and will help to hold your plow steady." I am well pleased to find that the acreage of alfalfa is increasing in Ohio. Nothing in my judgment will do more to bring up the price of land in this country.

QUESTION: Do you commence cutting just as soon as it comes into bloom?

ANSWER: Yes, sir, just as soon as it begins to bloom. Just as soon as ten per cent. of it is in bloom we cut it.

QUESTION: How soon do you take it up after you cut it?

ANSWER: That depends upon the weather conditions, but we take it in as soon as possible. Of course, what you sell you must cure more thoroughly. An ideal way is to cut it in the morning as soon as the dew is off, and then as soon as it wilts take it in. If we have to cock it up we make them small and high.

A FEW IMPORTANT POINTS IN DAIRYING.

BY C. A. PONTIUS.

Mr. Chairman and Ladies and Gentlemen: When the secretary wrote me asking me to give a short talk at this meeting on the herd, or a few important points in dairying, I wrote him saying, that if he would guarantee the audience to stand the punishment for a very short time, I would consent; and now if you will bear with me for a few minutes and pardon me for referring to my experience, I will not detain you long.

About twenty-three years ago at a college in northeastern Ohio, on a warm May day, while I was worrying and fretting over a hard examination, I decided to be a farmer, thinking then that a farmer did not need a college education; thinking that the advancement and improvement in farm machinery would make the occupation an easy and independent one. So I returned to my father's farm and went to work. Everything went well until the years of '95 and '96, when we could not realize more than 45 cents per bushel for wheat. Then my brother and I began to figure on something that would bring a revenue to the farm 365¼ days in the year. We went over nearly every subject. It finally resulted in the dairy business. He having married and, fortunately, had an old Jersey cow thrown in the bargain, which, with good attention, was a small source of revenue. I saw this, and I commenced to look up the business. I had to figure; the more I figured the more I got interested. The greatest difficulty I have now is to make the cows and figures come together.

The most important point in dairying, in my judgment, is the *herd;* without a good dairy herd it will be difficult to succeed and make much advancement under present conditions and high prices. Now, how is the best way to secure a good dairy herd for the average farmer with moderate and limited means? Is it best for him to deplete his limited account at the village bank and when that is done, borrow all the money he can and invest in high-priced stock, without any experience of either handling the herd or the products thereof? I say, no. The best and most economical way, in my judgment, to build up a good dairy herd with the least cost is to purchase a few good thoroughbred heifer calves of good dairy type and a good thoroughbred registered sire. We believe in pure blood, registered animals, as one can then determine from his pedigree what characteristics are shown by his ancestors and what are likely to develop in him. Always, when purchasing, know that his dam is a good producer, for her qualities are transmitted to her offspring and through them to her daughters. Thus we see that the daughters are influenced by the sire more than by the dam. This is the accepted theory, at least, and holds good in nearly every case. But in order to make assurance doubly sure, select and raise the calves from the best cows only, although I have seen heifer calves from a poor dam and a good sire to be good.

One of the problems which confront the dairymen who sell their milk is how to reduce the cost of raising calves. I will not try to solve it for all, but will state our own method. We feed our calves new milk three or four weeks, or until the calf is in good enough condition to take other feed. Then we make a feed by scalding clover leaves or making what is called hay tea, then add about one-half of old process oil meal per calf, or increase or decrease the amount of oil meal according to the size of the calf. Always give it nice and warm; never allowing any of the hot lumps of the meal in the feed. After this is fed they are fed a liberal amount of wheat bran and shelled corn with plenty of good clover hay. In this way I have raised some of as fine calves as anyone would wish to see. But care must be used and condition of each calf noted at every feeding, to see that you are not overfeeding or not having your feed in proper condition. In this way I believe calves can be raised as cheaply and well, but with little more attention than by the skim milk method. We always favor raising late fall or winter calves, because we can give them better attention during the winter season by being fed in this way, until we turn out to pasture; then the oil meal feeding stops and they are fed a liberal feed of wheat bran twice a day in a trough in the pasture, with plenty of fresh water and a little sprinkle of salt in the bottom of the trough once a day makes them thrive well.

It may be well before leaving, to say something concerning the raising of summer calves by this method. But summer calves are apt to be neglected and underfed, or what is worse, overfed; it must fight flies from morning till night, and when it goes into winter quarters, it is put entirely on dry rations and never does so well. A calf to make a good cow must have a good bringing up and must never be let stop growing from the time it is dropped until it becomes a cow. Once stunted, it takes a never-ending amount of work and patience to put it in growing condition again, and nine times out of ten it cannot be done.

Another and most important point in the whole business—I say whole business, because I mean that this is the point that will make the dairy business a success, and the one main point—no matter what breed of cattle you have, whether thoroughbred or scrubs; no matter whether the dairyman be rich or poor; whether he has dairy barns that cost thousands of dollars and dairy rooms and appliances of the most modern type; or whether it is in the plain. every-day dairy, the same method must be pursued to make the business a success. That is the simple care of the milk. No dairyman that ships milk or sells to any retailer need have any fear of being shut out when surplus arrives. This is not only true of the retail business, but in the butter, cheese and creamery business. I will venture to say that there is not one butter maker, cheese maker or creamery man present that will say that he can make a first-class article of butter, cheese or a prize lot of cream from milk improperly cared for, or as a great majority is cared for. Not at all. Simply milked, dumped into a can, lid put on hot and off it goes to the market. When I speak of this I very often wonder how some of the buyers of milk can maintain their business and hold their trade. In conversation with a brother dairyman a short time ago, he told me that he had a very nice, neat, very clean old neighbor that kept about half a dozen of nice Jersey cows, and there were three or four retail milk men passing his farm every day, each in turn buying the old gentleman's product for a time, and by and by dropping it and saying nothing. So he, in his turn, purchased the milk, not knowing there was anything wrong. After handling the product a few days, he, too, found out he had no use for the milk and left it on his hands, not wanting to say anything about the care of the milk, because everything was scrupulously clean about the place, and he did not want to hurt the old gentleman's feelings, and to tell him what was wrong would have made him very indignant, because he prided himself on being neat and clean. He simply did what hundreds of others are doing every day—milked, put milk in the can hot and put the lid on.

Just a word about a college education. Let me say to the young man of the farm, let him get a good agricultural education. To be a successful dairyman he needs to be versed in almost every branch of agriculture. They are closely interwoven, so that he must study them all. We are all in the dairy business for profit, then why not let up a little on the grinding part and stop and think; use the brains which you are fortunate enough to possess. Let them do part of the work; do the work scientifically and systematically. Be ever mindful of those principles which have been successfully employed by others. Apply them to your own needs and manage your dairy and farm by the same principles that any successful merchant, banker or manufacturer does, and success will crown your efforts. There are many positions open to the young man with a good agricultural education today; more than there are in any of the professions. The young doctors and lawyers are falling over each other trying to eke out an existence, while the young man with a practical agricultural education is always in demand.

Another, and very important, feature in the dairy business is a well equipped dairy barn, with all the modern conveniences so as to have everything to hand and of easy access. The barn should be roomy, warm and with plenty of windows, so arranged as to admit plenty of sunlight with good ventilation, and everything so arranged that the work may be attended to with the least number of steps possible. Have your milk room near at hand, so there need not be much time lost in going to and from it at milking times; for time and attention are two very important factors, because time to attend to the cows must be regular —time for feeding, time for milking, time for watering—and attention must be given at all times.

The more strict attention any dairyman gives his herd the better his herd will do and the more prosperous will he be for that attention. The time to overcome a difficulty in the dairy is at the moment that difficulty appears. This cow may be off her feed. That cow may have a calked udder. Give them your attention. Do not put off until tomorrow by saying, "I have not time today." Tomorrow may be too late. Time and tide wait on no man.

Let us then be up and doing,
With a heart for any fate,
Still achieving, still pursuing.
Learn to labor and to wait.

COW FEEDING IN TIMES OF HIGH PRICES.

BY PROF. C. D. SMITH.

Farmers are justly suspicious of the whole theory of a balanced ration when it is presented to them as a fixed rule and guide of faith and practice in cow feeding. They are justified in their suspicions. On the other hand, there are times and places when a knowledge of the composition of feeding stuffs on the one hand and the wants of the cow on the other works for economy. Names —trade names or otherwise—are poor guides to the contents and value of merchantable feeds, and unguided experience is insufficient basis for practical work in the stable.

Experiments have been carried forward for more than a generation in Germany and in this country, aimed to determine just what a cow needs in her food when she is giving milk. Innumerable cows have been put on the witness stand and have been cross-examined as to the relation of what they ate to what they yielded. The testimony thus brought out demonstrated that each cow is a law unto herself, and yet there was a certain and rather definite relation between the components of the ration and the quantity and quality of the milk produced.

Out of the great mass of fodder taken into the great reservoir of the first stomach, ground in the manifolds of the third and macerated with the acids of the fourth, the cow is able to extract the very elements she needs in making up her milk. Among these elements the chemist has studied out three great classes: the protein bodies, the starches, sugar, gums and other non-nitrogenous substantives, grouped for convenience into one category, though unlike, and called carbohydrates, and for the third group, the fats. The coarse fodders supply plenty of carbohydrates and fat, leaving the main struggle of the cow owner in the realm of the protein.

The cases are few in which the dairyman has not to buy some concentrated feeding stuff for the winter. What shall he buy? In answer, the students of rations have something practical to offer.

No man can expect to meet with great success in any business unless he conducts it on business principles. When, therefore, he sizes up his herd against what his farm produces, he knows what the main factors of his daily ration are going to be. He has weighed his hay or measured his mow and can therefore tell how many tons of clover hay he has on hand. He knows almost to a pound how many tons of silage he has, and from that basis can determine whether he shall feed thirty or twenty or forty pounds of silage per day. It is the function of the cow to consume what the farm produces. She is not to be set up on a pedestal and treated as queen, with every physiological requirement satisfied. The family eat pork and potatoes because they are the things at hand. The cow eats clover hay and silage because they are on the farm. Of course, the forehanded farmer adjusts the size of silo and bins to the number of cows, and thereby determines the relative proportions of the coarse feeds. But it is right here that the balancing of the ration begins. If the farmer has both clover and timothy hay, at going prices, he feeds all the clover possible and sells the timothy, knowing that ton for ton his clover hay outvalues the timothy. The dairyman knows, therefore, what he has on hand, and knows also how much of each coarse fodder he can feed each cow during the winter.

He then looks about to find out what he should buy to feed with his rough stuff. He has determined that fully six-tenths of the dry matter shall come from the coarse fodders and but four-tenths or less from the grains. He finds in his crib a good quantity of corn. He notes that he has a lot of oats also. Shall he feed them? Let us calculate a little to see.

That we may waste no time in illustrating what is meant by skill in buying the right feeds when prices are high, let us take the concrete instance of a farmer in Michigan, running a general farm with the dairy as the dominant factor. His property consists of four horses, ten cows, ten steers and twenty sheep. His feeding stuffs consist of six tons of timothy and twenty of clover hay, six tons of bean pods and eighty tons of good corn silage, seven hundred crates of ear corn and two hundred and fifty bushels of oats, and finally, besides quantities of straw (some seven hundred bundles), three tons of corn stalks.

Naturally, the first thing the farmer thought of was the proper distribution of the feeds on hand. Because the timothy would bring fifteen dollars per ton and the clover but ten, he wanted to sell the timothy, if he could. After a good deal of thought and cutting and trying, calculating rations and otherwise, he distributed the materials like this:

Horses—	5,760	pounds clover hay.
	3,600	pounds corn stalks.
	8,000	pounds oats.
	640	pounds shelled corn.
Cows—	16,240	pounds clover hay.
	75,000	pounds silage.
	2,400	pounds corn stalks.
	8,000	pounds bean pods.
Steers—	16,200	pounds clover hay.
	75,000	pounds silage.
	11,460	pounds shelled corn.
Sheep—	1,800	pounds clover hay.
	2,000	pounds bean pods.
	2,000	pounds silage.
	4,500	pounds shelled corn.

At the beginning of the season he knew that he had enough to last all the animals 180 days, through to time to turn out in the spring. He was not working by guess, but, accidents apart, by certainties. He is now ready to calculate what his ration will be like. Take the cows for instance:

His 42 pounds of silage, 21 pounds of shredded stalks, 4 pounds of clover hay and 4 pounds of bean pods would furnish the cow 17.51 pounds dry matter containing .71 pounds protein and 9.33 pounds of carbohydrates, all digestible, of course. He then begins to look about in the market to find what he can buy. Bran would cost $24 per ton, gluten meal $26, cottonseed meal $28 and corn meal $20. At prices existing in the neighborhood, the coarse fodder in the ration as given, would cost eight and one-half cents. What shall he buy to fill out a good, wholesome and effective ration?

Notwithstanding all that has been written in this country about the sufficiency of a meagre supply of protein, I am very strongly of the opinion that where the Ohio dairyman has good cows, he should give them a ration of fully 2.06 pounds of protein and fully 13 pounds of carbohydrates and fat. Subtracting the amount of these nutrients furnished by the coarse fodders from this standard ration, we have left a deficit of 1.35 pounds of protein and 3.67 pounds of carbohydrates and fat with a nutritive ration of not far from 1:3.

Next, the tables show us that a ton of cottonseed meal contains 744 pounds of protein, while a ton of gluten meal has but 516 pounds. Contrasting these figures with the prices of the two feeds, we find that the cottonseed meal furnishes the protein much the cheaper. On the other hand, we remember that in the northern climate it does not seem safe to feed more than a couple of pounds per day of the cottonseed meal. Why? We do not know, except that experience has shown the danger of overfeeding. We therefore add two pounds of the gluten meal also. Then we find that our ration stands 21.14 pounds of dry matter, containing 1.97 pounds of protein and 11.64 pounds of carbohydrates and fat. Subtracting this from our standard, we find that the nutritive ration of the deficit is almost that of corn and cob meal. We therefore add this corn and cob meal, two pounds per day, and our ration reads 22.84 pounds of dry matter, 2.06 of protein and 13 pounds of carbohydrates and fat.

This ration is given as an instance of the proper way to buy feeds when everything is high. Find what is on the farm to feed. Calculate the coarse feeds from the basis; then from the feeds offered in the market select the one which will furnish the protein the cheapest, feed as much of it as needed and fill out the ration with the other feeds as economy may suggest. This means that the feeds will be bought in order of cheapness and protein. Note that this also means that the dairyman understands the art of feeding and can tell whether it is safe to feed a given foodstuff or not.

I know of no short cut to success in this cow feeding. The successful man has both the art and the science of feeding. Both are indispensable. Either alone leads astray.

PRES. J. D. NICHOLS: This concludes our work for the morning session and if there is no further business to come before the meeting we will stand adjourned until this afternoon. I am certainly very much pleased to see so large an attendance at this morning session, and I trust that we shall have just as good an attendance at the session this afternoon. I know that, as a rule, a good many of our members are in a hurry to get away near the end of the session, and we are sometimes left with a very small crowd at the last sessions of the convention. This is not fair to the speakers who are to appear on the program, as they have prepared their work with great care, and it is very discouraging to talk to empty seats. I trust, therefore, that you will be able to arrange your affairs in such a way that you can be with us until the end of the convention. Your presence here will encourage the speakers who are on the program, and I am sure that you will receive a great deal of benefit. We will now stand adjourned until 1:30 p. m.

PROCEEDINGS OF THE OHIO DAIRYMEN'S ASSOCIATION HELD AT THE OHIO STATE UNIVERSITY

FRIDAY AFTERNOON.

The association was called to order by the president, J. D. Nichols, who said:

Ladies and gentlemen, this is the closing session of the convention, and we have a good deal to do in order to complete our program. I know that many of you have been here from the beginning and that you are anxious to get back home as soon as possible. While we are all anxious to get away as soon as possible, yet I feel like saying that this session is just as important as any of them, and I trust that you will not have to leave until it is over. I will not take up any more time in talking, but will introduce the first speaker of the afternoon. I have the pleasure of introducing Prof. Oscar Erf, who will talk to you on the subject of "Breeding Dairy Cows."

BREEDING DAIRY COWS.

BY OSCAR ERF.

Professor of Dairying Ohio State University.

The best way to improve dairy cows is by breeding. The individual animal for reproduction should be selected as follows:

First, with reference to her ability to produce milk and butter fat with the greatest economy of feed and labor.

Second. It is necessary that it should have prepotent powers so as to reproduce her profitable characters in her offspring.

While there are other factors which bear directly upon the increased production of butter fat of a cow, such as better feed and better care, none of these, however, are so important as breeding. A cow may be fed according to the best methods known to science, yet may not be a good milk producer. She may be both well fed and well cared for and still not be an economical milk producer. Breeding must therefore be the starting point for dairy improvement, and the success of the dairy business depends largely upon this factor. However, this process of breeding should be carried out methodically, for without system in breeding we can never accomplish good results. Haphazard methods have been practiced for many hundred years with little gain in profit.

A dairyman should study and become acquainted with each individual animal in the herd. He should know three things about every cow that he owns:

First. How much milk will she give in a year?

This should not be calculated for a week or a month, for the dairyman must feed the cow for the whole year.

Second. He must know the richness of the milk in order to determine its market value.

Third. He must know how much it costs to keep a cow a year. This is important to determine the cost of production, for it is the net profit that makes a cow valuable.

He must introduce a scheme on his farm that will determine these three factors in every cow in his herd. While this seems to be a comparatively easy system to put into operation by each individual dairyman, there seems, however, to be a lack of interest, possibly owing to the fact that it introduces a small amount of extra labor; and while the press and the dairy colleges of the world have been elaborating upon this scheme, trying every possible way to interest the dairyman in weeding out his cows by this method, yet little progress has been made in introducing this system.

After many trials it has been found that it is quite necessary to introduce in the dairy operations another department, which may rightfully be termed the bookkeeping department, but which, under a technical name, is known as a Co-operative Cow Testing Association. This system has been found the cheapest and the most efficient way of selecting and weeding out the unprofitable dairy cow for the average dairyman. These associations have been introduced in a number of European countries. For instance, in Denmark there are over four hundred of these organizations; in Sweden there are now about five hundred; in Normandy about one hundred and eighty; Germany and Holland also have a large number.

An outline of the practical working of these associations is as follows:

A few farmers living in a community and owning cows organize themselves into an association, provided with a proper constitution, which can be secured from the Dairy Department of the Ohio State University. Officers are elected and a man is employed to carry out the work of the association. The expenses are paid pro rata by each man in proportion to the number of cows he owns. It is desirable to have a sufficient number of cows in the association so that the expenses will not exceed $1.50 per cow per year. The duty of this man is to visit a herd each day. He arrives in the afternoon, sees the cows milked, takes a sample of the milk and estimates the feed and its cost. He puts all these data on a record blank, a duplicate of which is left with the dairyman. This performance he repeats the next morning and the dairyman, during the day, takes him and his outfit to the next farmer, where he proceeds to do likewise.

He ought to visit each farmer once a month, and at the end of the year he estimates the milk and butter fat, the value of the same and the cost of feed to maintain each cow for a year. In plain words, this is nothing more than a bookkeeping proposition, in which the dairyman or farmer pays a man $1.50 per cow per year, who in turn will give you a statement showing you the net profit of each cow in your herd at the end of the year. A very good proposition.

This system, wherever introduced, reveals the fact that it becomes one of the greatest stimulants for better work. Self pride will cause a man to clean his barns, to repair his stables and to keep his cows in better shape when a man comes around once a month to look over his business than if such were not the case. Progress is largely the result of self-pride. To show the results that have come about by this system I cite you to Denmark, where these associations have been in operation the longest period of time and which, during the last twenty years, reveals the fact that the butter production per cow has been increased from 120 to 200 pounds. This amounts to eighteen million pounds of butter per year, or in money value about $5,000,000, produced in an area about one-third the size of Ohio, without any extra expense for feed; produced by the mere process of selecting good cows to remain in your herd and from which to breed, and by selling the poor ones.

Two years ago such an organization was started in Michigan. The plans of this organization were copied from those of the European countries, and the results of this first year's work were indeed phenomenal. We find that the profits have actually been increased 100 per cent. in many herds in this two years of work. There are at present a great many of the associations organized and we hope that the good work may go on. While this system reveals the profitableness of an animal at the present time, we are prone to look forward and investigate what system we can legitimately introduce that will gradually increase the efficiency of dairy cows in the future. With this view in mind I drew up a scheme for the National American Breeders' Association two years ago. While no results have been obtained, and probably for some years to come none can be obtained, the scheme has been frequently proven to be based on good principles and results must come. The scheme practically embodies the plans of the Cow Testers' Association, but goes one step farther and embodies in it a scheme to determine a second important factor, named in the beginning: how to determine prepotency. An outline of the plan is as follows:

First. It is necessary to perfect organizations consisting of dairymen who are breeding dairy cattle of the same breed and in the same locality. If there are several distinct breeds in the same locality, different organizations may be formed.

The object of this organization is to distribute risks and expenses which are necessary to bring about this increase of butter fat production. The individual dairyman cannot afford to undertake this matter without the co-operation of other dairymen and the assistance of one of the various breed associations, and if possible, the government should have direct supervision over all such organizations.

Second. This organization should employ a party to keep a record of each cow in the various herds in that locality. This record should include the amount of milk, milk solids and butter fat produced, and also the breeding of each individual cow. This record can be determined in the following manner:

Weigh the milk and test the same for butter fat and milk solids for three consecutive days each month throughout the period of lactation. At the end of the year the approximate amount of milk, milk solids and butter fat produced by each cow can be calculated.

This record is accurate to the extent of 96 per cent. for the amount of milk produced and 94 per cent. for the amount of butter fat produced, as compared with the records that would have been taken every day during the period of lactation. This is sufficiently accurate for practical conditions.

A standard should be set to which each individual should reach, if it is to be kept for breeding purposes. For instance, a standard of 6,000 pounds of milk and 250 pounds of butter fat per year. The breeding and performance records of the ancestors of the cow should be had for at least three generations back, and records for future breeding should be provided for. After records extending over at least two periods of lactation have been obtained, all animals that do not reach the standard should be sold, and also the individuals which have a capacity a little above the standard, but which do not have any characteristics of the breed they represent.

Third. At the beginning of this plan the party in charge of all the records should select several bulls or bull calves which are from cows producing not less than 350 pounds of butter fat per year, and whose sires are from cows that produce a similar amount of butter fat. The bull should be as typical to the breed he represents as can be secured. With animals of this characteristic at hand it is quite essential to determine the prepotency of each sire. It is essential that the bulls with such characteristics should have the power to transmit their milking qualities to the offspring.

Fourth. The only definite way to determine the prepotent powers of a sire is by trial. This requires considerable time and frequently the animal will reach the age of seven or eight years before his real value will be known. This is estimating that the first service should be at heifer calf that is sired by him is two years old at the beginning of the first period of lactation, and the record should extend over a period of two years. But this time and money that has been spent will become quite remunerative if a sire can be discovered that possesses great prepotency along the line of milk production.

The procedure of determining the prepotency is as follows:

Bulls should be kept under the same conditions and bred to similar cows in various herds. After the first period of lactation change the order of breeding. For illustration: Assuming there are two bulls, No. 1 and No. 2. All cows bred to No. 1 the first year should be bred to No. 2 the second year, and those bred to No. 2 the first year should be bred to No. 1 the second year. The bull that transmits his qualities to the greatest number of offspring is the most prepotent. However, to determine the matter of performance, it is necessary to rear the heifer calf and keep a record of the same for at least two periods of lactation.

In a large herd there will always be some heifers which will not come up to the standard, and possibly a few that will not resemble the breed which they are to represent. Of course, these should be discarded and the ones having a milk and butter fat producing equal to or better than the standard that is set should be kept for breeding purposes. By continuing to weed out cows that are not up to the standard and by breeding those that are above the standard to sires of great prepotency and from a strain of cows that are up to their standard, the capacity of the average cow can undoubtedly be greatly increased.

While none of the organizations have been formed in Ohio, we trust that the dairymen will be progressive enough to take up some of these plans. For the present revenue from the dairy business is enormous and it is bound to become greater and ought to become more profitable. The Dairy Department of the University is always ready to give you its hearty co-operation and assist you in every legitimate way to introduce these improved schemes to make dairying more remunerative and a more pleasant field of work.

LESSONS FROM THE MILK CONTEST.

BY C. B. LANE.

Assistant Chief United States Dairy Department.

To make a success of a milk contest it is quite necessary for a state dairy association to have a good, active secretary, and I congratulate this association in having such a man as Prof. Guthrie to look after its interests. And I also heartily congratulate the dairymen of Ohio on the splendid exhibit of milk and cream displayed here today. And I believe these milk contests are going to have a great influence in the future in the production of cleaner and better milk. Friendly competition is a great stimulant, and by putting your product alongside of the other fellow's you learn much that you never knew before, and whether your product is better than his, or whether you find it is not as good, you learn a lesson just the same. In the one case you learn that you are practicing right methods, and in the other your faults are made evident and you know where you must improve. I have watched this movement with much interest since the national contest in Chicago in February, 1906. Besides your state, New Hampshire, Pennsylvania, Massachusetts, Connecticut, Michigan and Illinois have held contests; also the city of Cleveland, Ohio. It is with much pleasure, therefore, that I have the privilege of being with you in this your second contest, to test the good milk and cream which you have on exhibition. Some of the milk scoring ninety-six points and one sample of cream ninety-six and one-half points. You would have to travel a long way in our cities to find such milk and cream for sale; in fact, certified milk rarely reaches this score. I was in a dining car on a Chicago train the other day and noticed on the menu, "Milk, fifteen cents per bottle" (one-third of a quart), which you would see amounts to forty-five cents a quart.

I secured a bottle of this milk, which was certified, and found it of excellent quality, but no better than some of yours. The thing that impressed me was the possibility of securing a price for milk equal to forty-five cents a quart or one dollar and eighty cents a gallon. If some of your good dairymen could get your good products before the public in as attractive form as this dairyman, using bottles of a special size and type, you would stand just as good a chance of selling it. While the milk was good, I believe the style of package helped as much to sell the product as the quality of the milk.

SCORING MILK.

With higher ideals of food products and a knowledge of their composition have come more careful methods of judging them. The commercial value of milk and cream, for example, has, until recently, been rated by the city boards of health and by the milk dealers on the basis of fats and solids they contained. If they reached a certain standard in respect to these qualities and contained no preservatives, no questions were asked. Now we are beginning to go further in this matter and to consider the sanitary condition of these products, and standards are being established for bacteria, for foreign matter, for pus cells, temperature, etc. In other words, *cleanliness* is considered a commercial quality.

Naturally, the consumer should be most interested in these standards for judging milk, but he is quite helpless in any attempt he may make to bring about improvements, as considerable time is required to make efficient tests and simple appliances are lacking. There is one thing that may be said here about the score-card. When it is in the hands of an honest judge, it is no respecter of persons or wealth or position, hence it always gives a square deal.

We will now take up the method used in scoring the milk in this contest:

Flavor. You will notice on your score-card that flavor is the first point to be considered. The most points (40) are given to this, for the reason that it is considered the most important. Unpalatable milk or cream is practically of no value as an article of food; on the other hand, if these products contain a low percentage of fat or an excessive number of bacteria and still have a good flavor they may be utilized, and in fact a good deal of milk and cream of this character is used. Hence, it is apparent that flavor is of first importance. This is also recognized in butter and cheese, where flavor is often given 45 points out of 100. Clean milk possesses little flavor or odor. If well supplied with fat, however, it may be described as rich, clean, sweet and pleasant. Slight contamination can often be detected more readily by the sense of smell than by the taste.

Most of the milk exhibited in this contest scored well in flavor. Odors of the cow stable could be detected in a few samples, but on the whole the flavor was generally good. Some had a little too strong silage odor and one or two had a stale flavor, due to unclean utensils or possibly the dish cloth. The best sample of milk scored 36 out of a possible 40, and the poorest 31. The score for cream varied from 31 to 38.

Composition. Under this head is included the percentage of fat and solids not fat. Fortunately these two things are quite easily determined in the laboratory by the Babcock test and lactometer. It is important that milk shall be of good average composition—say 4.0 per cent. fat. Further than this the consumer is but little interested. In case milk is used for making butter or cheese, however, the fat content is of great importance, as its value for the manufacture of these products is dependent upon the amount of fat contained in it. If market milk contains 4 per cent. of fat and 8 per cent. solids not fat, we consider it perfect in scoring. While this standard is somewhat higher than the state standards for milk, it gives a little encouragement to the dairyman who is making an effort to serve his customers with a good quality of milk. All samples scored perfect for composition except one.

Bacteria. The number of bacteria in milk serves as an indicator; that is, if the number is high, we are safe in inferring that the milk has either been produced and handled under unsanitary conditions or else it has not been properly cooled, or is too old. If the number of bacteria runs up to a million or more to the cubic centimeter of milk (15 drops), it becomes dangerous as a food and may cause sickness, particularly when given to children. Many dairymen do not realize the importance of keeping the cow clean, the stables free from cobwebs, dust and flies, and the utensils sterilized. One fly may add a million bacteria to milk, a cow hair may add 26,000 and a piece of hay 150,000 more. The small top milk pail often prevents millions of bacteria from getting into the milk, particularly in a dirty stable. Prompt and efficient cooling is also important in keeping the bacteria count low. Milk kept at 50 degrees F. for 24 hours may contain only 89,000 bacteria to the cubic centimeter, while the same milk kept at 70 degrees F. may contain 4,000,000. In scoring, therefore, we take the number of bacteria into consideration and allow 20 points if the number does not exceed 10,000 to the cubic centimeter. However, if the number only reaches 100,000 we consider it of fair quality. If above 500,000 nothing is allowed. I congratulate the dairymen entering this exhibit on the low bacterial content. Only two samples of milk and four of cream exceeded

100,000, while four of milk and eight of cream were 10,000 or below. The variations, however, were quite extreme, ranging in the milk from 2,000 per c. c., to 1,400,000, and in the cream from 10,000 to 8,000,000.

Acidity. Five points are allowed for acidity or sourness, if it does not exceed .2 per cent. All of the samples were found to be perfect in this respect.

Appearance. The package containing milk should be clean, free from metal parts and should have no visible foreign matter. If tin tops or other metal parts are permanently attached to the bottles, they are difficult to clean and can hardly be considered sanitary. If dirt is found in the bottom of the bottle, such as particles of manure, hair, bedding, etc., it is an indication that the milk is produced under dirty conditions. Boards of health are now making more of a point of this matter and are imposing fines for dirty milk as well as adulterated milk. Until recently, a man who put a little water in his milk was heavily fined, while the dairyman who had filthy, disease-producing milk, which was infinitely more dangerous to health, went scot free.

You may remember that the greatest criticism made of this exhibit a year ago was on this very point—dirt in the milk—and I believe many of you learned a lesson at that contest and I am glad to say that dirt in the milk this year was hard to find in some samples, even with a microscope. The majority, however, had a little sediment and there is room for some improvement in this respect. I would like to make it clear that even if the dairyman succeeds in straining out coarse particles that may get into the milk, this does not remedy the trouble entirely, for the reason that the milk has already become contaminated and cannot be cleaned again. Probably nine-tenths of the bacteria have passed into the milk by dissolving, and the bad flavor is still there, even though the coarse particles have been removed by the strainer.

Market cream is scored on a basis similar to that of market milk.

All of the above conditions have been considered in detail in scoring your products, and the ratings have been given on the score cards which you will find with your exhibits. It may be of interest to note that the *highest* score for milk this year was 96, while the *highest* score last year was 92.5. The *average* score this year was 90, and the *average* score last year was 90.2.

As to lessons from milk contests, or perhaps I had better say *value* of milk contests, they are helpful to the producer in that they point out to him very clearly the exact conditions of his product, and show him where he can improve. They present an object lesson which is not easily forgotten. They are of value from an educational standpoint and the dairyman comes to understand the importance and significance of improved methods of handling milk, hence a contest may be the means of starting him on the road to success. I believe these contests will tend to promote a more kindly feeling between dairymen and health officers. This was certainly true in Cleveland, where, on the inauguration of the inspection division of the board of health, considerable opposition developed among the dairymen, but with a thorough understanding of the object of the inspection, which was set forth at the dairy meeting held in connection with the milk contest, this opposition has ceased and inspection is sought and welcomed. The most cordial relations now exist between the dairymen and the inspection department. I am told that the milk contest and the dairy farm contest held in connection with it, definitely contributed to this better spirit. This is further shown in a letter directed to the board of health and signed by eleven representative dairymen, which is as follows:

"We, milk producers, who ship milk to the city of Cleveland, desiring to make and ship milk of good quality and to observe the sanitary regulations as prescribed by your honorable body, respectfully ask that each and every person shipping milk to the city of Cleveland be required to take out a permit to be issued by your honorable body, revocable at your pleasure.

"That said permits shall be classified as 1 or 2. That dairies which score 50 points or above be classified as No. 1 and all dairies which score below 50 points to be classified as No. 2. That all milk dealers, shippers and peddlers who sell milk in the city of Cleveland be required to apprise their customers by placard or otherwise at all times of the class of milk that they are offering for sale, and in case of failure to do so, or in case of said milk dealer, shipper or peddler offering for sale, milk shipped into the city of Cleveland without a permit, said milk dealer, shipper or peddler's license shall be forfeited.

Austin Herrick	H. E. Post
W. A. Mills	G. W Adams
H. F. Bicker	W. H. Chambers
S. H. Mizer	A. F. Dresher
O. H. Bennett	C. E. Riley
	E. Bowen."

This to me is a very encouraging sign for cleaner milk in the future, when dairymen take the initiative themselves and pledge themselvs to observe the sanitary regulations prescribed by the board of health. The trouble has been that the board of health has not met the dairymen half way in the past. They have gone after him with a club, when they should have first offered suggestions, assistance and encouragement. Then, if he did not get busy, apply the law. Many dairymen do not understand why it is that methods which have been accepted for the past twenty-five years are suddenly condemned. They want an explanation, and they are entitled to it. But I believe that when the dairyman understands the importance of greater cleanliness and that cow manure was never intended to go with milk any more than with water, bread or any food substance, and that it is a poison, he is ready to make improvements.

Up to the present time there has been but little incentive to the production of high-class milk, with possibly the exception of certified milk. Clean and dirty milk have sold for the same price and in direct competition with each other. This is not right. With other commodities the grade determines the price. It should be so with milk.

There are indications, however, that the dairyman who produces clean milk will in the future receive a premium for his product, and the careful inspection of the dairy farm and the milk produced is going to help to bring this about. Already an advanced price is being offered by the milk dealers in Cleveland for milk from high-scoring dairies. This certainly is encouraging to the dairyman who is trying to produce a clean product. Every farm should be inspected, and such inspection should be welcomed by every intelligent dairyman. A score such as was given in this contest, stating certain conditions found in the dairies to be satisfactory, will have a tendency to increase the sales and inspire confidence. It will be for the dairyman's interest in the future to produce clean milk, and he should be rewarded for his efforts. Producers should hold together in this matter. Public sentiment is with the movement for a better milk supply, and the prices of feedstuffs and labor being high, the producers have every reason to demand a fair price for a good product. But they should see to it that their product is clean and that it deserves the price demanded. It is not for the producer's interests to allow the consumer to get the idea that this most valuable food product, milk, is produced and handled under dirty conditions.

Value to the Dealer. Milk contests are of value to the dealer in assisting him to determine where the good dairies are, hence making it easier for him to find a supply of milk to meet the demands made upon him for a good product. With a supply of good milk to handle there is less trouble with sour milk and less complaint from consumers.

Value to the Consumer. The principal value of these contests to the consumer is in pointing out the defects in milk, and showing him what good milk really is. Clean milk certainly ought to command a premium over dirty milk. With the average consumer, however, milk is looked upon as a necessity to be bought as cheaply as possible. If he is asked to pay a higher price, he immediately characterizes it as robbery. He gives little thought to the fact that the price of grain has been increasing during the past ten years and that wages for farm labor are not only higher but the labor is more difficult to obtain. The consumer should know that it costs more to produce clean milk and that it means extra labor and extra care, and the dairyman cannot be expected to produce it without a reasonable profit.

Thompson says it costs twice as much to keep a cow today as it did ten years ago, and if the milk kept pace in price with the feed that goes into it, a fair price today would be 16 cents a quart.

It is probable that some consumers are paying a very high price for ordinary milk, while on the other hand, there is much milk of a high quality that is selling for a low price.

The majority of consumers do not know what good milk is. (Illustration.) The consumer needs to be educated, for it is through him that this problem of clean milk will be eventually solved. If the consumer does not know what clean milk is, and does not ask for it—and is satisfied to pay for dirty milk at dirty-milk prices—then why should the dairyman produce clean milk? What is the use in legislating and enforcing city ordinances for a product that the people do not want? The consumer should not be willing to pay as much for dirty milk as for clean milk. He should appreciate the fact that clean milk costs more. It only costs $9 per cow to produce milk any old way, and it costs $54 to produce clean milk.

I believe the time is soon coming in some of our cities when the health authorities, dairy farmers, milk dealers and consumers will all work together for a wholesome milk supply. Such a working arrangement is not impossible at the present time in some of our cities. To accomplish this the dirty dairy will need to be brought up to a reasonable sanitary condition, the health authorities asking for nothing unreasonable. The dairyman should be protected from unfair prosecution, and from the competition of dirty milk which now sells for the same price as clean milk, in many instances. The interests of the public and of the dairyman are one, and just as soon as they can be made to see this, many of the present difficulties in the clean milk crusade will disappear. What most of us need is not more dairy knowledge, but a better application of that we already have.

UNITED STATES DEPARTMENT OF AGRICULTURE,
BUREAU OF ANIMAL INDUSTRY,
WASHINGTON, D. C.
DAIRY DIVISION.

FEBRUARY 13, 1908.

Mr. E. S. GUTHRIE, *Secretary Ohio Dairymen's Association, Columbus, Ohio:*

DEAR SIR:—In accordance with my promise to you that I would write my criticisms of the butter which I scored with Mr. Burridge, will say that as a whole both the creamery and the dairy butter was of fair quality. The workmanship on most of the creamery butter was good, except the body. Some samples showed a brittle, some a salvey quality. The former was due undoubtedly to too high churning temperature, or too high temperature of the wash water, the latter due to working the butter too much. The greatest defect was in flavor. A considerable portion of the samples showed indications of poor milk or cream—probably held too long and allowed to absorb odors from the room in which the milk or cream was kept. There were also several samples which had a very distinct silage flavor, which can be entirely obviated by feeding the cows after milking and not allowing any silage in the barn at any other time. The silos should be so constructed that the doors do not open directly into the barn in which the animals are kept, as odors from the silage penetrate milk and cream very readily. Silage will also taint the milk if it is fed in excessive amounts. This is especially true in the latter part of the season. Whether it is because of the increased acidity the sileage contains, or whether the systems of the cows become saturated with the odor, is more than I can say. At any rate, I know if cows are fed forty pounds of silage in the fall of the year it will not taint the milk, but if they are fed continuously on this amount for several months the flavor of silage will be detected in the milk, and it becomes stronger and stronger with the lapse of time.

Some of the samples of butter were soft and appeared to be fresh from the churn; all of these were cut on body because of that condition. Butter should not be put on exhibition for several days after it is made. One or two samples of creamery butter also had an oily flavor, which evidently was produced by stale butter color. The oil in butter color will become rancid the same as any other kind of oil. Therefore it is necessary to keep the color can well corked and in a dark place. It should also be kept from freezing. As stated above, the greatest defect was in flavor, which shows the need of better milk and cream. The responsibility for this rests largely with the producer.

I hope that the dairymen of Ohio will work for quality. With the growing cities in your State I believe it is possible for local dairymen and creameries to supply a fancy trade at an advanced price, providing they will make a superior quality. There are dairymen and creameries in the Eastern states getting high prices for their butter because of its reputation for fine quality.

With reference to the dairy butter, I wish to compliment some of the buttermakers, whoever they may be, for the fine quality, although not all of the samples were fine, some of them showing the usual defects, namely, those of abnormal flavors absorbed by the cream before it was churned into butter. Several samples of the dairy butter also showed a distinct silage taint. There were two or three that had a very bad, oily flavor, no doubt due to rancid butter color, which perhaps had been held over from the year before, or purchased from a grocer or druggist who had kept it on his shelves for several years. One or two samples appeared to have the flavor of machine oil, which I believe was nothing more than rancid color.

I wish to take this opportunity to compliment the officers of your association for the large number of exhibits of butter and machinery on exhibition; also on the large number of dairymen in attendance, all of which leads us to believe that the dairymen of Ohio are interested in the work and we look forward to the time when they will be able to produce an article with which there can be found no fault. Wishing the dairymen of Ohio, and officers and members of the Dairymen's Association success, I remain, Very truly yours,

B. D WHITE.
In charge of Factory Organization and Management Investigations.

CRITICISM ON BUTTER EXHIBITS.

BY E. I. BURRIDGE.

The chief faults with the creamery butter exhibited at this meeting of the Ohio Dairymen's Association are not very much different from those found in the butter that is coming forward from all sections this winter. The writer has been in the business for thirty-three years and never has seen the quality of winter butter so poor as it is this year. The chief points on which the butter exhibit is scored are unclean flavor and old milk. These are two points that the butter makers cannot very well get around. Under present conditions in this state the milk or cream is held too long before it is made into butter, and it possesses no keeping quality in addition to carrying strong flavors that have already set in through decomposition.

The chief faults in butter in the exhibit here will come not through the maker so much as they do through the producer. It is doubtful if any man, by any process, could have made a high-scoring tub of butter out of the raw material from which these exhibits were made.

The fault is in the system and the system must go. In the best markets in this country the question of quality is beginning to take its proper position and to dictate the price of the product.

If the present shiftless conditions of handling milk and cream prevail another two years, the writer is willing to predict that there will be a difference of not less than five cents per pound between creamery butter made from whole milk and the ordinary product of hand separator factories.

It is not necessary that this should be so, for as good butter can be made under the separator system as under the factory system. The cold fact remains that while it can be made, it is the exception rather than the rule. Some of the dairy butter on exhibition here was nice, and some of it was most miserably awful poor, showing pronounced feeding and stable flavors.

There are but a few samples of dairy butter here but what show more or less flavors of the feeding from which they were produced, and the most of them were poor flavors.

COMPOSITION, CONDITION AND SCORE OF MARKET CREAM.

Number.	Name.	Place.	Fat.	Acidity.	Total bacteria per cc.	Package.	Score for Flavor.	Score for Composition.	Score for Bacteria.	Score for Acidity.	Score for Package.	Score for Total.
			%	%			40	25	20	5	10	
1	B. F. Wilcox	Columbus	33.2	.137	15,000	Clean	34.5	25	19	5	10	93½
2	H. W. Stormont	Xenia	23.8	.132	60,000	Sl. Sed.	38.	25	17	5	9¾	94¾
3	Newcomb Bros.	Burton	25.	.153	385,000	Sl. Sed.	35.	25	4	5	9½	78½
4	T. P. White	Hooker	40.4	.122	25,000	Clean	34.	25	19	5	10	93
5	J. F. Staggers	Powell	38.	.122	10,000	Sl. Sed.	36.	25	20	5	9¾	95¾
6	Geo. Purdum	Columbus	40.2	.132	150,000	Sl. Sed.	34.	25	14	5	9¾	87¾
9	Big Meadows Farm	Mt. Victory	26.2	.223	8,000,000	Sl. Sed.	31.	25	00	3	9½	68½
14	L. P. Bailey	Tacoma	21.4	.153	10,000	Clean	36.5	25	20	5	10	96½
15	E. Mathews	Columbus	34.	.188	135,000	Sl. Sed.	34.	25	14	5	9¾	87¾
16	E. R. Leedy	Bellville	32.6	.127	40,000	Sl. Sed.	36.5	25	18	5	9½	94
19	Bert Smith & Son	Columbus	32.6	.158	10,000	Clean	36.	25	20	5	10	96
20	C. B. Ross	Pleasant Plain	38.	.101	10,000	Dirty	34.	25	20	5	8½	92½

Bacteria, 10,000 to 8,000,000; dirt, 8 out of 12; flavor, 31 to 38; score, 68½ to 96.½

L. P. Bailey won the $5.00 prize and D. H. Olds' fine Jersey calf. Bert Smith & Son took the $3.00 prize, and J. F. Staggers the $2.00. H. W. Stormont won the West Jefferson Creamery Co's. special prize of $5.00.

COMPOSITION, CONDITION AND SCORE OF MARKET MILK.

Number.	Name.	Place.	Fat.	Sol. not fat.	Acidity.	Total bacteria per cc.	Package.	Score for					
								Flavor.	Composition.	Bacteria.	Acidity.	Package.	Total.
			%	%	%			40	25	20	5	10	
7	Geo. Purdum	Columbus	5.1	9.47	.168	6,000	Sed.	35.5	25	20	5	9	94½
8	T. P. White	Hooker	4.7	9.37	.163	7,000	Sed.	34.	25	20	5	9	93
10	Big Meadows Farm	Mt. Victory	8.6	10.0	.173	1,400,000	Sed.	Sil.31	25	00	5	9	70
11	L. P. Bailey	Tacoma	5.4	9.6	.178	78,000	Sl. Sed.	35.	25	16	5	9¾	91¾
12	Jas. Mateer	Columbus	4.1	9.1	.158	106,000	Sl. Sed.	Sil. 33	25	15	5	9.5	87½
13	E. Matthews	Columbus	5.5	9.1	.153	29,000	Sed.	34.5	25	18	5	8	90½
17	E. R. Leedy	Bellville	4.2	9.3	.153	2,000	Sl. Sed.	36.	25	20	5	9.5	95½
18	Bert Smith & Son	Columbus	4.8	9.1	.163	5,000	Clean	36.	25	20	5	10	96
21	C. B. Ross	Pleasant Plain	6.4	9.0	.158	12,000	Sed.	34.	25	19	5	9	92
22	F. C. Ball	Mt. Vernon	3.6	8.5	.153	38,000	Sl. Sed.	33.	23	18	5	9.5	88½

Bacteria, 2,000 to 1,400,000; dirt, 9 out of 10; flavor, 31 to 36; score, 70 to 96.

Bert Smith & Son won the $7.00 prize and the special $10.00 given by the Ohio State University Creamery; E. R. Leedy won the $3.00 prize and the West Jefferson Creamery Co's. special prize of $10.00, and Geo. Purdum the $2.00 prize.

CREAMERY BUTTER

Name	Address	Color used	Salt	Separator
Triumph Dairy Co	Lockwood	Dandelion	Worcester.	Sharples
Pickerington Butter Co	Pickerington	Alderney	Worcester.	DeLaval
West Jefferson Creamery Co.	Columbus	Hansen	Triangle	Simplex
C. H. Pettit	Reynoldsburg	Alderney	D. C.	U. S.
O. A. Yokom	Thompson	W. & R.	Colonial	DeLaval
W. J. Bangham	Wilmington	Alderney	D. C.	DeLaval
New Vienna Creamery Co	New Vienna	W. & R.	Worcester.	DeLaval
Springfield Pure Milk Co	Springfield	Hansen	Colonial	DeLaval
Horr Bros	Leesburg	Alderney	Colonial	DeLaval
H. E. McConnell	Milford Center	W. & R.	Worcester.	DeLaval
C. M. McConnell	Woodstock	W. & R.	Worcester.	DeLaval
Kramer & Dickman Creamery Co	Minster	Hansen	Worcester.	DeLaval
Jacob E. White	Greenfield	Alderney	Worcester.	Simplex
B. M. Rutan	Marysville			

DAIRY BUTTER

Name	Address	Color used	Salt used	Separator
C. F. Myer	Beidler	W. & R.	Grano Crys	U. S.
H. C. Bell	Springfield	W. & R.	Colonial	DeLaval
Mrs. A. White	Richwood	W. & R.	Clear Quill	U. S.
Mrs. B. Smith	Xenia	Alderney	D. C.	DeLaval
G. L. Hyslop	Deshler	W. & R.	D. C.	Sharples
G. Purdum	Sta. A, Columb's	W. & R.	Worcester.	Cleveland
O. T. Aydelotte	Campbellstown	Alderney	D. C.	U. S.
Mrs. C. W. Embick	Lancaster	W. & R.	Rock Crys.	Sharples
O. S. Walter	Greenford	W. & R.	Colonial	DeLaval
G. B. Johnston	Osborn	Alderney	D. C.	DeLaval
Mrs. E. P. White	Hooker	W. & R.	Worcester.	U. S.
C. H. Petre	Springfield	W. & R.	Colonial	DeLaval
E. C. Miller	Canton	Dandelion	D. C.	Sharples
Mrs. C. P. McKeever	Williamsburg	None	Grano Crys	Star
M. O. Surbey	New Berlin	Dandelion	D. C.	Sharples
A. C. Bailey	Tacoma	Dandelion	Dairy	Cooley
D. H. Horst	Dalton	Dandelion	Colonial	DeLaval
E. Cotner	Seville	Alderney	Morn'g Gy	Empire
A. J. Murray	New Paris	Dandelion	Colonial	U. S.
L. Croomer	Hebron	Hansen	D. C.	Gravity
E. F. Lippincott	East Rochester	Dandelion	Worcester.	Empire
W. H. Strong	Swanton	Dandelion	Burnaps	Sharples
Miss. M. Wheeler	Pleasant City			
J. C. Zollinger	Millersport			
Dunlap & Morris	Kingston			

The West Jefferson Creamery Co. won the $25.00 prize; The Springfield Pure Milk Co. the $15.00 prize, and the New Vienna Creamery Co. the $10.00 prize.

SCORE CARD.

Churn	Starter	Flavor (45)	Body (25)	Salt (10)	Color (15)	Package (5)	Total (100)	% Water
Square box.	Sour milk ...	36.5	24.75	10.	15.	5.	91.25	12.4
Squeezer ..	Hansen	36.	24.75	9.75	15.	5.	90.5	14.8
Simplex ...	Ericsson	39.75	25.	10.	15.	5.	94.75	13.7
Squeezer...	None	34.	24.	10.	15.	5.	88.	13.8
Disbrow...	Ericsson	35.	25.	10.	15.	5.	90.	13.2
Simplex ...	None	36.	24.75	10.	15.	5.	90.75	14.0
Disbrow...	None	38.	24.75	10.	15.	5.	92.75	14.1
Disbrow...	Elgin	38.75	25.	10.	15.	5.	93.75	12.2
Disbrow...	Hansen	36.5	25.	10.	14.75	5.	91.25	13.2
Victor.....	Mome-made	37.	24.	10.	15.	5.	91.	13.1
Disbrow...	Douglas	37.5	24.75	10.	15.	5.	92.25	12.0
Disbrow...	Hansen	33.5	23.75	10.	15.	5.	87.25	14.8
Simplex ...	None	35.5	24.5	10.	15.	5.	90.	12.2
....	....	35.5	25.	9.75	15.	5.	90.25	13.5
							Average...	13.21

SCORE CARD.

Churn	Starter used	Flavor (45)	Body (25)	Color (15)	Salt (10)	Package (5)	Total Score (100)	% water
Davis	Buttermilk.	38.	24.75	15.	10.	5.	92.75	11.9
Davis	None	36.	24.5	14.5	9.5	5.	89.5	9.6
Buckeye...	None	27.5	24.	13.5	9.5	5.	79.5	10.4
Barrel.....	Wholemilk..	31.	24.75	15.	10.	5.	85.75	11.7
Victor.....	Buttermilk..	36.	24.75	15.	10.	5.	90.75	11.4
Reid.......	None	34.5	24.5	15.	10.	5.	89.	11.4
Davis	None	39.5	24.	15.	9.75	5.	93.25	9.6
Barrel.....	None	33.	21.5	13.	9.5	5.	85.	12.6
Barrel.....	Buttermilk .	35.	24.	15.	10.	5.	89.	10.3
Simplex ...	None	28.	24.5	14.5	9.5	5.	81.5	10.9
Dash.......	Ericsson....	29.5	24.5	15.	9.5	5.	83.5	13.4
Davis	None	33.	24.5	14.	9.5	5.	86.	10.5
Reid.......	Buttermilk .	35.5	25.	15.	10.	5.	90.5	13.4
Davis	None	37.	24.5	14.5	9.75	5.	90.75	12.9
Bent.......	None	33.	24.	15.	10.	5.	87.	11.4
Davis	Hansen	35.	24.	15.	10.	5.	89.	11.7
Ideal.......	None	25.	23.5	15.	10.	5.	78.5	8.9
Davis	None	34.	24.	15.	9.5	5.	87.5	11.7
Standard ..	Ericsson.....	34.	24.5	15.	10.	5.	88.5	10.2
Barrel.....	None	33.5	24.	15.	10.	5.	87.5	15.0
Favorite...	Buttermilk .	30.5	23.5	15.	10.	5.	84.	13.5
Victor.....	Buttermilk .	27.5	24.5	15.	10.	5.	82.	no test..
....	....	33.	24.	15.	10.	5.	87.	13.5
....	....	35.5	25.	14.5	10.	5.	90.	11.5
....	....	30.5	24.	15.	10.	5.	84.5	12.8
							Average..	11.67

O. T. Aydelotte won the $25.00 prize and the Pontius Bros.' Jersey Calf; C. F. Myer won the $15.00 and Mrs. C. P. McKeever and G. L. Hyslop tied for the $10.00 prize.

PRES. J. D. NICHOLS: We will now listen to a report of the judges on the milk test. This report will be read by the secretary, Mr. E. S. Guthrie. I am sure you will take great interest in this report.

MR. E. S. GUTHRIE: Ladies and gentlemen, I have the pleasure of making the following report, as to the decisions of the judges, on the milk and butter tests, held during the session of this convention.

Secretary Guthrie reads the report of the decisions of the judges.

PRES. J. D. NICHOLS: We will now hear the report of the treasurer of the Dairymen's Association.

Treasurer's report read and adopted.

TREASURER GUTHRIE: I herewith submit the report of the auditing committee. This report will be read by the chairman of the committee, Mr. E. W. Hoyt.

MR. E. W. HOYT: We, the auditing committee, appointed by your president to inspect all the books of this association, and the accounts of the secretary and treasurer, after making an examination of the same, find that the books are properly kept and the accounts are correct.

Signed,
E. W. HOYT,
A. S. NEAL,
HIRAM J. RUSSELL.

On motion the report of the auditing committee was unanimously adopted by the association.

PRES. J. D. NICHOLS: We will now listen to a report of the committee on resolutions. This report will be read by the chairman of the committee, L. P. Bailey, of Tacoma.

L. P. BAILEY: Members of the Dairy Association, gentlemen, your undersigned committee on resolutions beg leave to report the following, which we trust will meet with your approval. This committee has been in session for some time, and we have endeavored to present a set of resolutions which we hope will meet with your approval. I beg leave to submit the following resolutions, and I would suggest to the president of this convention that these resolutions be taken up singly and voted upon. We think that will be more satisfactory than to read the entire set of resolutions before acting upon them.

On motion it was ordered that the resolutions be voted upon singly, so that any discussion or changes that may be desired could be taken up as the reading of the resolutions proceeded.

RESOLVED, That the Ohio State Dairymen's Association expresses appreciation and thanks to Governor Harris for the interest he has taken in the association and for the time and expression he has given to the association.

RESOLVED, That we grant a vote of thanks to Mr. W. W. Marple, of Chicago, for his interesting talk, and also to Mr. Lane for scoring samples of milk, and to Mr. White and Mr. Burridge for scoring butter.

Resolved, That we grant a vote of thanks to Mr. A. B. Nystrom, Herbert Gibson and Mr. Clevenger for the assistance they have given to the scoring of the dairy products of the Ohio State Dairymen's Association.

Resolved, That the Ohio Dairymen's Association approves the work as being done by the Dairy Department of the Ohio State University and desires to have the work extended so that it will become more effective by giving practical instructions to the producer, consumer and all interested in dairy work in the state..

We therefore petition the legislature to appropriate $5,000 to carry on this dairy educational work in the field. This appropriation is to be entrusted to the board of trustees of the Ohio State University, who are to appropriate such amounts from time to time as are needed. The work is to be directly under the guidance of the Ohio Dairymen's Association and Dairy Department of the Ohio State University.

On account of the extent and importance of the dairy industry in Ohio, and the need for investigational work in the breeding, rearing and feeding of dairy animals, be it

Resolved, That we urge the legislature to appropriate funds sufficient to provide a dairy barn, a dairy herd and to employ an assistant in dairy husbandry and such other help as may be needed to carry on the work of dairy investigation.

Resolved, That recognizing the great importance of the science of veterinary medicine to the live stock interests of the state, and realizing the urgent need of better equipment and facilities at the State University Veterinary College, be it resolved, therefore, that we ask the legislature to lend to this college its aid and support by fully meeting the request of the authorities of the university in regard to the appropriations asked for this college.

Resolved, That in the death of Prof. John W. Decker, the state of Ohio in general, and the dairy interests in particular, have met an incalculable loss.

Prof. Decker came to Ohio from Wisconsin in 1899 for the purpose of taking charge of the work in dairy instruction at the Ohio State University. The department of dairying at that time was passing through the formative period, and it was to him that a large part of the work of this period fell. With what wisdom and energy he met this arduous task the present efficiency of this department bears emphatic testimony.

In the work of the Ohio Dairymen's Association Prof. Decker always took an active part. Perhaps no other individual has toiled so unselfishly and so untiringly in the interest of this association as he. His merits as a writer and speaker on dairy subjects, and an educator along his chosen lines of work are recognized by all.

Therefore, as a token of appreciation of the Ohio Dairymen's Association of the merits of this dairyman, educator and christian gentleman, be it

Resolved: First, that this association recognizes in the death of Prof. Decker an irreparable loss.

Second. That we tender to his family our sincere sympathy in its affliction.

Third. That a copy of these resolutions be spread on the minutes of the association and published in its forthcoming annual report.

Fourth. That a copy of these resolutions be engrossed and presented to the family of the deceased.

Fifth. That the forthcoming annual report be dedicated to his memory.

During the discussion of the resolution asking for an appropriation from the State legislature to give field lessons in dairying throughout the

State, there was some opposition to the plan of having this work done under guidance of the State university. A resolution was offered by Mr. Herrick that this appropriation be placed in the hands of the State Board of Agriculture instead of the dairy department of the State university. Some of the speakers presented the idea that our young men we are sending out from the State university, and the fact that their audiences were composed of older men and women, it did not have the good results that should be expected. The idea has prevailed among a few persons that if this appropriation was under the auspices of the State Board of Agriculture it would bring into the work a more mature set of men whose presence would give a better impression to the work. These impressions were answered by Prof. Oscar Erf, who said:

PROF. O. ERF: Gentlemen of the convention, I do not think that it is possible to put any set of men into the field who are more practical than the men trained in this university. I would like to know where you can get a set of men who have a better and more practical knowledge of the dairy business.

There are certain qualifications necessary to a man who goes out to instruct the people in the dairy business; he must have practical experience and he must have practical training along the lines of his work. It is necessary that he have this training so that he can appear before an audience and instruct them in an intelligible manner. He must be able to express his opinions in a manner that shall be effective on his audience. I want to say frankly, that we are more interested in the dairy business than the live stock men ever can be. I also want to emphasize the fact that we are here to indorse every movement and to put good men in the field, and we think that it should be under the guidance of the Dairy Association. If this resolution prevails it will be our purpose to appoint men that will be entirely acceptable to the Dairy Association.

I feel that it would be a mistake to place the direction of this work in the hands of the State Board of Agriculture.

PRES. J. D. NICHOLS: I want to say that the State Board of Agriculture never did anything especially for the dairymen; they send out institute lecturers, but they do not work along the lines in which we are most interested. If this resolution is passed, we will send out men who are especially interested in our line of work, and who will do work that will be especially valuable to the dairymen of this State. I am in favor of the resolution as read.

After some further discussion the resolution was adopted as read.

On motion a vote of thanks was extended to Secretary E. S. Guthrie, for his faithul and efficient work in connection with the Dairymen's Association. Mr. Guthrie made a neat speech, thanking the association for the compliments, and in the course of his remarks said that he felt the association could not pay him at the same rate for his services. He therefore asked that his salary be reduced. He suggested that it be made fifty dollars per year. A number of gentlemen spoke along this line, and all agreed that the services performed by the secretary were worth much more than is being paid for them. After considerable discussion the suggestion of Mr. Guthrie was accepted. On motion the action of the convention was reconsidered, and the fixing of the salary of the secretary was referred to the board of directors with power to act. This action was unanimously endorsed by the convention.

A motion was offered to hold the next meeting in the northern part of the State. This motion was discussed at some length, but the concensus of opinion was that Columbus being centrally located would be the best place to hold the annual meeting.

On motion it was decided to leave the time and place of holding the next meeting to be decided by the the board of directors.

On motion a vote of thanks was extended to the Williamson sisters for the excellent music furnished during the convention.

Pres. J. D. Nichols: We will next listen to the awarding of the prizes for the best milk and butter. I want to thank the exhibitors who entered this competition, and I trust that the exhibits will be larger each year. I feel sure that there is nothing that will advance the interests of dairymen in Ohio more than these friendly contests.

I am sure that every exhibitor will be benefited by it whether he is awarded a prize or not. I know that when we began these contests a good many dairymen felt that they did not want to enter these contests and be beaten by their neighbors. I am glad to say that our dairymen are taking a more sensible view of the matter and begin to feel that these friendly contests are an incentive to do better work, and that the exhibits are an inspiration for dairymen to strive to reach a higher standard in the production of butter and milk. I am sure that we are all agreed that anything which will increase the standard of our products is a benefit to dairymen as a whole. As I said in the beginning, I trust that these exhibits will become one of the chief features of our convention. I have the pleasure of introducing Mr. E. S. Guthrie.

Mr. Guthrie then took the floor and awarded the prizes for the best milk and butter. Mr. Guthrie closed with some general remarks on the value of these contests.

Pres. J. D. Nichols: If there is no further business to come before this convention we are ready to hear a motion for adjournment. Before entertaining a motion to adjourn, I want to say in closing this fourteenth annual meeting of the Ohio State Dairymen's Association that it has been one of the most successful we have ever held, and I am pretty familiar with the history of this organization since its beginning. We have had a larger attendance from the first session to the last than we have ever had, and I feel that every one present has been deeply interested in all the proceedings that have taken place. I am certain that all that came to this meeting came here for the purpose of being benefited, and that they will go away with many valuable suggestions, and go back to their homes with a new inspiration to do better work than they have ever done before. I wish to extend my thanks to you all for your presence here and the help which you have given to make this convention a success.

I want also to express my earnest thanks to Mr. Dawley for the elegant addresses he has given us. His addresses were to the point and took up so many of the problems which we, as dairymen, are called upon to solve. I know from the questions you put to him the keen interest you felt in everything he said, and I am sure his experience along these lines will be very valuable to you.

I also want to extend my thanks to Mr. Marple, of Chicago, for the very valuable aid he has given us in this convention. I am sure that you enjoyed his addresses and that you will carry back with you many valuable suggestions.

I am sorry that we did not have the presence of Prof. C. D. Smith at this meeting. He is always an inspiration to us and you all appreciate his work. His addresses, however, are put in shape and will be published in the proceedings of this meeting, so that you will have the benefit of what he has to say, although you were denied the privilege of seeing and hearing him on the floor of this convention.

I also want to extend my thanks to the officials of the State university for their many courtesies and favors during this convention. I am sure they have done everything to make us feel welcome here. In connection with this I want to express my gratitude to Professors Erf and Guthrie for their untiring efforts to make this fourteenth annual meeting a complete success. They have labored earnestly and faithfully to this end, and they deserve the thanks of every member of this association.

I want also to thank the local dairymen for the part they have taken and for the willingness with which they have performed the duties assigned to them. Personally I want to thank every member of this association for their attendance at the meetings and for the interest they have manifested in all the sessions.

I wish to say in conclusion that I am thankful for the honor you have conferred on me in choosing me as your president for another year. I shall work harder for the success of this association in the future than I have done in the past. Whatever I can do to make this association better will be done at the sacrifice of both time and money. If I have committed any errors in the past it was because I did not see the right way, and I hope by your assistance to do better in the future. In conclusion I want to say that I shall give the Association my best efforts at all times. I am now ready to entertain a motion to adjourn.

On motion the convention adjourned.

REPORT OF TREASURER.

This report does not cover the expenses of the entire 1908 convention, but ends with February 12. 1908. the time at which the auditing committee examined the books.

OHIO DAIRYMEN'S ASSOCIATION.

Dr.

Carried over from 1907	$166.25
Typewriting two copies of discussion in Milking Machine	2.00
Contributions	260.00
Program "ads"	126.55
Membership Fees	151.80
Total	705.80

Cr.

Stamps	$83.60
Express	4.54
Printing	118.50
Expenses of Secretary to Wooster and Return to Columbus; to Canal Winchester and Return	6.50
Labor (Mailing Reports and Programs; Stenographic Work, Etc.)	57.98
Buttons and Badges	15.68
Incidentals	2.35
Total	$289.15
Balance on hand	$416.65

LIST OF CONTRIBUTORS.

(General Fund.)

The Cleveland Cream Separator Co., Cleveland, O.	$50 00
The Ohio Creamery and Dairy Supply Co., Cincinnati, O.	25 00
The DeLaval Cream Separator Co., 74 Cortlandt St., New York	25 00
Creamey Package Mfg Co., Chicago, Ills	20 00
Sharples Separator Co., West Chester, Pa	20 00
The Worcester Salt Co., New York, N. Y	10 00
The Diamond Crystal Salt Co., St. Clair, Mich	10 00
The Thatcher Mfg. Co., Elmira, N. Y	10 00
The Western Ohio Creamery Co., Greenville, O.	10 00
The Vermont Farm Machine Co., Bellows Falls, Vt	10 00
The J. B. Ford Co., Wyandotte, Mich	10 00
Wells, Richardson & Co., Burlington, Vt	10 00
The Empire Cream Separator Co., Bloomfield, N. J	10 00
The West Jefferson Creamery Co., Columbus, O.	5 00
Moores & Ross Milk Co., Columbus, O.	5 00
The White Mountain Creamery Co., New Bremen, O.	5 00
The Delaware Creamery Co., Delaware, O.	5 00
The Licking County Creamery Co., Newark, O.	5 00
Total	$245 00

SPECIAL SEPARATOR COMPANY FUND.

The DeLaval Separator Co.	$25 00
The Vermont Farm Machine Co.	15 00
The Cleveland Cream Separator Co.	15 00
Total	$55 00

CREAMERIES AND CHEESE FACTORIES OF OHIO.

(Not Complete.)

Name	Akron Pure Milk Co.
Owner	Corporation.
Manager	A. G. Teeple.
Address	Akron, O., Summit Co.
Product	Milk (not a creamery).
Amount	4,000,000 pounds milk per year.

SUBSTATION.

Name	I. N. Harter.
Address	Kilbuck, O., Holmes Co.
Cows	300.

Name	Alexandria Creamery Co.
Owner	Alexandria Creamery Co.
Manager	F. F. Wyman.
Address	Alexandria, Licking Co., O.
Product	Butter, ice cream, cream.
Amount	$50,000.
Cows	900 or 1,000.

SUBSTATION.

Name	F. A. Fisher.
Address	Alexandria, O., Licking Co.
Cows	600 or 700.
	(The $50,000 includes both plants.)

Name	American Farm Products Co.
Owner	Alfred G. Masling,
Manager	Alfred G. Masling,
Address	Kenton, Hardin Co., O.
Product	Butter and cheese.
Amount	3,000 pounds milk daily.

SUBSTATIONS.

Name	Geo. O'Brien.
Address	Forest, O., Hardin Co.
Cows	Not known.
Amount	800 pounds butter daily.

Name	Jas. Haley.
Address	Belle Center, O., Logan Co.
Cows	Not known.
Amount	4,000 pounds milk daily.

Name	Martin Feck.
Address	Pfeifer Station, Hardin Co., O.
Cows	Not known.
Amount	3,500 pounds milk daily.

Name	Andalusia Dairy Co.
Owner	Corporation.
Manager	E. H. Campbell.
Address	Salem, Columbiana Co., O.
Product	Butter, milk and sweet cream.
Amount	$100,000 per year.

SUBSTATION.

	Operate 4 skimming stations and have 8 cream routes.
Cows	Not known.

Name	Bakersville Cheese Factory.
Owner	H. A. Schlarb.
Manager	H. A. Schlarb.
Address	Bakersville, Coshocton Co., O.
Product	Round Swiss cheese and whey butter.
Amount	Cheese 43,000 pounds; butter 2,800 pounds per year.

Name	Beech Glen Creamery.
Owner	C. F. Phillips, and Landen, Cleveland, O.
Manager	Andrew Lillick.
Address	Novelty, Geauga Co. O.
Product	Milk and cheese.
Amount	280,000 pounds milk per year.

Name	Beech Glen.
Owner	Lander-Phillips Dairy Co.
Manager	Lander-Phillips Dairy Co.
Address	5624 Kinsman Rd., S. E., Cleveland, O.
Product	Not given.
Amount	1,500,000 pounds milk. Milk sent to them in Cleveland when needed; balance made into cheese.

SUBSTATIONS.

Name	O. J. Fulton.
Address	Novelty, Geauga Co., O.
Cows	Not given.
Amount	1,300,000 pounds milk sent to city per year.

Name	W. H. Opper.
Address	Binnfield, Portage Co., O.
Cows	Not given.
Amount	1,200,000 pounds milk sent to city per year.

Name	R. Santora.
Address	Chardon, Geauga Co., O.
Cows	Not given.
Amount	25,000 gal. 30% cream sent to city per year.

Name	Ethin Wyman.
Address	Brunswick, Medina Co., O.
Cows	Not given.
Amount	26,000 gals. 30% cream sent to city per year.

Name	Western Reserve Cond. Milk Co.
Address	Kent, Portage Co., O.
Cows	Not given.
Amount	37,000 gals. 20% cream sent to city per year.

Name	Boneta Co-operative Swiss Cheese Co.
Owner	Stock. Co.
Manager	J. H. Dever.
Address	Sharon Center, R. F. D. 2, Medina Co., O.
Product	Swiss cheese and separator whey butter.
Amount	40,000 pounds cheese and butter in 8 months.

Name	Broadway Creamery.
Owner	A. O. Collinson & Co.
Manager	A. O. Collinson.
Address	Broadway, Union Co., O.
Product	Cream.
Amount	75,000 pounds 60% cream per year.

Name	Brooks Creamery Co.
Owner	Corporation.
Manager	A. T. Brooks.
Address	Macedonia, Summit Co., O.
Product	Cheese, cream and milk shipped.
Amount	1,200,000 pounds milk per year.

Name	Carey Creamery Co.
Owner	Sherman Hill and Fred E. Grooms.
Manager	Fred E. Grooms.
Address	Carey, Wyandotte Co., O.
Product	Ice cream, sweet cream and butter.
Amount	500,000 pounds milk and cream.

Name	Celina Creamery Co.
Owner	Julius R. Thaman.
Manager	Julius R. Thaman.
Address	Celina, Mercer Co., O.
Product	Butter and pasteurized milk and cream.
Amount	$60,000 per year.

SUBSTATIONS.

Name	Aloys Gels.
Address	St. Henry, Mercer Co., O.
Cows	Not given.
Amount	Not given.

Name	Jas. Halpin.
Address	Swanders, Shelby Co., O., R. F. D. No. 1.
Cows	Not given.
Amount	Not given.

Name	Chardon Creamery.
Owner	Telling Bros. Co., Cleveland, O.
Product	Cream and milk.
Amount	$21.520.85 per year.

Name	Chardon Independent Creamery Co.
Owner	Corporation.
Manager	E. E. Moyer.
Address	Chardon, Geauga Co., O.
Product	Cream and cheese.
Amount	Operated by the Lucania American Cheese Co.

Name	Clover Leaf Creamery Co.
Owner	Corporation.
Manager	Jas. E. Manning.
Address	Toledo, Lucas Co., O.
Product	Milk and sweet cream and cottage cheese.
Amount	Not given. General wholesale and retail business.

Name	Colebrook Cheese Factory.
Owner	W. J. Eldridge, Aurora, O.
Manager	Fred J. Wenger.
Address	East Orwell, R. F. D., Ashtabula Co., O.
Product	Cheese and butter.
Amount	130,364 pounds cheese, 1,845 pounds butter per year.

Name	Columbia Center Creamery.
Owner	Hynes and Wilson.
Manager	C. E. Hynes.
Address	Pataskala, Licking Co., O.
Product	Milk and sweet cream.
Amount	1,800,000 pounds milk per year.

Name	Cottage Creamery Co.
Owner	J. K. Arnold.
Manager	J. K. Arnold.
Address	Cleveland, Cuyahoga Co., O.
Product	Butter.
Amount	182,500 pounds per year.

SUBSTATIONS.

Name	H. A. Sebekow.
Address	Orrville, Wayne Co., O.
Cows	Not given.
Amount	300,000 pounds per year.

Name ....Vern Bourlier.
Address ....North Royalton, Cuyahoga Co., O.
Cows ....Not given.
Amount ....72,000 pounds per year.

Name ....Crystal Spring.
Owner ....Wallace, Gordon & Co.
Manager ....P. C. Merryfield.
Address ....5827 Broadway, Cleveland, Cuyahoga Co., O.
Product ....Not given.
Amount ....Not given.

SUBSTATION.

Name ....H. E. Parker.
Address ....Mantua, O., Geauga Co.
Cows ....250.
Amount ....6,000 pounds milk.

Name ....Dalton Cheese Factory.
Owner ....Benjamin Amstutz.
Manager ....Amos Amstutz.
Address ....Dalton, Wayne Co., O.
Product ....Swiss cheese and whey butter.
Amount ....30,000 to 40,000 pounds per year. Operated summer only.

Name ....Delaware Creamery Co.
Owner ....W. Z. Evans.
Manager ....W. Z. Evans.
Address ....Delaware, Delaware Co., O.
Product ....Milk, condensed milk, cream and butter.
Amount ....Not given.

Name ....Diamond Cheese Co.
Owner ....Corporation.
Manager ....A. W. Ladrach.
Address ....Vermillion, Erie Co., O.
Product ....Swiss cheese and butter.
Amount ....100,000 pounds cheese, 1,800 pounds butter per year.

SUBSTATIONS.

Name ....Otto Ladrach.
Address ....Brownhelm Plant, Brownhelm Co., O.
Cows ....200.
Amount ....50,000 pounds cheese.

Name ....M. L. Foster.
Address ....Vermillion, Erie Co. O.
Cows ....300.
Amount ....75,000 pounds.

Name	Dorset Cheese Factory.
Owner	W. L. Fuher.
Manager	L. S. Harman.
Address	Dorset, Ashtabula Co.; O.
Product	Cheese.
Amount	2,500 boxes.

Name	East Mecca Cheese Factory.
Owner	W. Eldridge.
Manager	J. F. Wanamaker.
Address	Cortland, Trumbull Co., O.
Product	Full cream cheese.
Amount	Not given.

SUBSTATION.

Name	J. F. Wanamaker .
Address	Cortland, Trumbull Co., O.
Cows	450.
Amount	107,943 pounds cheese per year.

Name	Eldorado Creamery Co.
Owner	Corporation.
Manager	C. E. Shewman.
Address	Eldorado, Preble Co., O.
Product	Butter.
Amount	150,963 pounds.

Name	Not given.
Owner	W. J. Eldridge.
Manager	W. J. Eldridge.
Address	Aurora, Portage Co., O.,
Product	Butter and cheese. Amount not given.

SUBSTATION.

Name	Frank Hurd & Co.
Address	Aurora, Portage Co., O.
Cows	And amount not given.

Name	Home Factory.
Owner	W. J. Eldridge.
Manager	R. Oswald.
Address	Aurora Station, Portage Co., O.
Product	Cheese.
Amount	111,796 pounds cheese in 9 months; 23,175 pounds milk shipped in 3 months.

SUBSTATIONS.

Name	W. J. Ernst.
Address	Montville, Geauga Co., O.
Cows	Not given.
Amount	111,293 pounds cheese per year.

Name ....Charles Pfeninger, Streetsboro, O.
Address ....Hudson, R. F. D. No. 4, Summit Co., O.
Cows ....Not given.
Amount ....104,375 pounds cheese 9 months; 58,722 pounds milk shipped 3 months.

Name ....C. Graber.
Address ....North Burton, Geauga Co., O.
Cows ....Not given.
Amount ....286,896 pounds cheese 9 months; 211,469 pounds milk 3 months.

Name ....Geo. Drake, Bainbridge, O.
Address ....Chagrin Falls, O., R. F. D.
Cows ....Not given.
Amount ....123,323 pounds cheese 9 months; 82,756 pounds milk 3 months.

Name ....Geo. H. Meech, Auburn, O.
Address ....Chagrin Falls, O., R. F. D.
Cows ....Not given.
Product ....140,039 pounds cheese 9 months.
Amount ....200,162 pounds milk 3 months.

Name ....Chas. Steuble, Mantua, O.
Address ....Mantua, Portage Co., O., R. F. D.
Cows ....Not given.
Amount ....70,771 pounds cheese.

Name ....John Rufener, Russel, O.
Address ....Novelty, Geauga Co., O., R. F. D.
Cows ....Not given.
Amount ....119,218 pounds cheese per year.

Name ....H. L. Coats, Troy, O.
Address ....Mantua, Portage Co., O., R. F. D. No. 30.
Cows ....Not given.
Amount ....105,612 pounds cheese per year.

Name ....F. R. Edgington, Troy, O.
Address ....Burton, Geauga Co., O., R. F. D.
Cows ....Not given.
Amount ....190,117 pounds cheese 8 months; 240,126 pounds milk 4 months.

Name ....F. A. Frazier, West Mecca, O.
Address ....Cortland, Trumbull, Co., O., R. F. D. No. 4.
Cows ....Not given.
Amount ....117,703 pounds cheese per year.

Name ....John F. Wanamaker, East Mecca, O.
Address ....Cortland, Trumbull Co., O., R. F. D. No. 5.
Cows ....Not given.
Amount ....105,632 pounds cheese.

Name	F. J. Wanamaker.
Address	Cortland, Trumbull Co., O.
Cows	Not given.
Amount	68,647 pounds cheese per year.

Name	F. J. Wenger, Colebrook, O.
Address	East Orwell, Ashtabula Co., O., R. F. D. No. 2.
Cows	Not given.
Amount	125,036 pounds cheese.

Name	Isaac Goodman, Boston, O.
Address	Peninsula, Summit Co., O., R. F. D. No. 13.
Cows	Not given.
Amount	30,524 pounds cheese per year.

Name	Emerald Cheese Factory.
Owner	Emerald Dairy Co.
Manager	A. V. Case; Sec'y, M. L. Crouch.
Address	Lockwood, Trumbull Co., O., R. F. D. No. 1.
Product	Cheese and butter.
Amount	135,000 pounds cheese; 4,000 pounds butter.
Cows	300.

Name	Findlay Dairy Co.
Owner	Corporation.
Manager	D. E. Child.
Address	Findlay, Hancock Co., O.
Product	Bottled pasteurized milk.
Amount	$1,350 per year.

SUBSTATION.

	Purchase from about 25 farmers.
Amount	650,000 pounds.

Name	Florence Factory.
Owner	Cloverdale Dairy Co.
Manager	Not given.
Address	7800 Detroit St., Cleveland, O.
Product	Swiss cheese.
Amount	7,400 cans milk shipped; 40,000 pounds cheese made per year.

Name	Galena Creamery Co.
Owner	Co-operative Co.
Manager	W. C. Roberts; Sec'y, J. J. Wilcox.
Address	Galena, Delaware Co., O.
Product	Cream and butter.
Amount	$28,000 per year.

Name	Galion Creamery.
Owner	J. E. Brinnon & Sons.
Manager	B. B. Brinnon.
Address	Galion, Crawford Co., O.
Product	Butter.
Amount	60,000 pounds per year.

Name	Gilt Edge Creamery.
Owner	Jos. and Allen Kairn.
Manager	Jos. A. Kairn.
Address	Summerside, Clermont Co., O.
Product	Milk and cream.
Amount	Not given.

Name	Gorham Elgin Creamery.
Owner	Co-operative Co.
Manager	F. O. Penell.
Address	Fayette, Fulton Co., O.
Product	Butter.
Amount	152,400 pounds per year.

SUBSTATION.

Name	John Kutlidge.
Address	Alvordton, Williams Co., O.
Cows	135.
Amount	26,630 pounds made from milk received from above.

Name	Granger Burg Cheese Factory.
Owner	McMillan & Wait.
Address	Medina, Medina Co., O., R. F. D. No. 2.
Product	Cheese.
Amount	150,000 pounds per year.

Name	Gratiot Co-operative Creamery.
Owner	Co-operative Co.
Secretary	R. M. Hamilton.
Address	Gratiot, Licking Co., O.
Product	Butter.
Amount	28,186 pounds per year.

Name	Grove Cheese Factory.
Owner	C. J. Smith.
Manager	C. J. Smith.
Address	Garrettsville, Portage Co., O.
Product	Full cream cheese.
Amount	100,000 pounds per year.

Name	Good Heald Farm.
Owner	L. E. Holden.
Secretary	Ben. Rentenick.
Address	Mentor, Lake Co., O.
Product	Milk.
Amount	70,000 gallons per year.
Cows	86 to 95.

Name	Guysville Creamery Co.
Owner	Corporation.
Manager	Isaac Brewer.
Address	Guysville, O.
County	Athens.
Product	Butter.

Name ....Peter Hahlen Cheese Co.
Owner ....Peter Hahlen.
Manager ....Peter Hahlen.
Address ....Homeworth, Col. Co., O.
Product ....Swiss cheese and butter.
Amount ....40,000 pounds cheese and 2,000 pounds butter.

Name ....Hamilton Milk Co.
Owner ....Corporation.
Manager ....H. T. Mallon.
Address ....Hamilton, Butler Co., O.
Product ....Milk and cream,.condensed milk.
Amount ....$30,000 per year.

Name ....Harmony Creamery Co.
Owner ....Corporation.
Manager ....B. F. Otto.
Address ....Pittsburg, Pa.
Product ....Milk and cream.

SUBSTATIONS.

Name ....Russell Maris.
Address ....Newton Falls, O.
Cows ....150 patrons.
Amount ....2,422,845 pounds; paid to patrons $36,326.98.

Name ....C. E. Bigalow.
Address ....West Farmington, O.
Cows ....75 patrons.
Amount ....1,835,617 lbs. milk; paid to patrons $25,753.51.

Name ....H. E. Haworth.
Address ....Wayland, O.
Cows ....135 patrons.
Amount ....1,292,324 pounds milk; paid to patrons $16,702.93.

Name ....Albert Thomas.
Address ....Royers, O.
Cows ....130 patrons.
Amount ....916,985 lbs. milk; paid to patrons $14,771.22.

Name ....Harrisville Creamery Co.
Owner ....Corporation.
Manager ....Oliver W. Binns.
Address ....Adena, Jefferson Co., O., R. F. D. No. 2.
Product ....Butter.
Amount ....112,361 pounds per year.

Name ....Helvetia Milk Condensing Co.
Owner ....Corporation.
Manager ....Timothy Majonnier.
Address ....Delta, Fulton Co., O.
Product ....Evaporated milk.

Name ....B. B. Herrick Cheese Co.
Owner ....Corporation.
Address ....Wellington, Lorain Co. O.
Product ....Full cream cheese.

SUBSTATIONS.

Name ....Lewis J. Morgan.
Address ....Wellington, R. F. D., Lorain Co., O.
Cows ....365.
Amount ....110,676 pounds per year cheese.

Name ....John W. Parkinson.
Address ....Kipton, Lorain Co., O.
Cows ....300.
Amount ....90,725 pounds per year.

Name ....A. W. Gould.
Address ....Kipton, Lorain Co., O.
Cows ....380.
Amount ....98,354 pounds cheese per year.

Name ....B. B. Herrick.
Address ....Wellington, Lorain Co., O.
Cows ....200.
Amount ....80,576 pounds cheese per year.

Name ....Hillside Butter and Cheese Factory.
Owner ....Van. B. Bailey.
Address ....West Liberty, Logan Co., O.
Product ....Cream.
Amount ....187,353 pounds milk and 23,609 pounds cream.

Name ....Leesburg Creamery.
Owner ....Horr Bros.
Manager ....Horr Bros.
Address ....Leesburg, Highland Co., O.
Product ....Butter.
Amount ....42,728 pounds per year.

Name ....Lena Co-operative Butter Factory Co.
Owner ....Incorporated.
Manager ....Geo. S. Cox.
Address ....Lena, Miami Co., O.
Product ....Cream and butter.
Amount ....40,000 pounds butter fat.

Name ....W. T. Leonard & Co. (Successors to Riverside Creamery Co.)
Owner ....W. T. Leonard & Co.
Manager ....Jos. W. Borchers.
Address ....Ottawa, Putnam Co., O.
Product ....Butter.
Amount ....197,000 pounds per year.

Name	Loudonville Creamery.
Owner	A. W. Miles.
Manager	A. W. Miles.
Address	Loudonville, Ashland Co., O.
Product	Butter and sweet cream.
Amount	145,016 pounds butter; 5,473 gallons cream.

SUBSTATIONS.

Name	N. E. Young.
Address	Perrysville, Ashland Co., O.
Cows	Not given.

Name	C. G. Fulmer.
Address	Greersville, Knox Co., O.
Name	A. D. Hughes.
Address	Warsaw, Coshocton, Knox Co., O.
	Milk from substations shipped to Loudonville and included in above figures.

Name	Mansfield Pure Milk Co.
Owner	Corporation.
Manager	Wm. Manigen; R. W. Hartman, sec'y.
Address	Mansfield, Richland Co., O.
Product	Retailing milk; work surplus into butter and cheese.
Amount	Paid to farmers for milk $35,273.87.

Name	Maple Grove Creamery.
Owner	Margery Pilmer.
Manager	James Pilmer.
Address	Homeworth, Columbiana Co., O.
Product	Butter, cream and milk.
Amount	Butter about 26,000 pounds per year.

Name	Marysville Creamery.
Owner	Ben. M. Rutan.
Address	Marysville, Union Co., O.
Product	Milk, cream, butter; amount $30,000 per year.

Name	B. A. Mast Cheese Co.
Owner	B. A. Mast.
Address	Walnutcreek, Holmes Co., O.
Product	Swiss cheese and butter.
Amount	60,000 pounds cheese; 5,000 pounds butter per year.

Name	McJunkin Straight Dairy Co.
Owner	Corporation.
Manager	E. M. Bailey.
Address	Pittsburg, Allegheny Co., Pa.
Product	Pasteurized milk and cream, butter, cheese, fermented milk food.
Amount	Not given.

SUBSTATIONS.

Name	L. J. Kinney.
Address	Austinburg, Ashtabula Co., O.
Cows	1,000.
Amount	Milk shipped to Pittsburg.

Name	W. W. Griffin.
Address	Rock Creek, Ashtabula Co., O.
Cows	300.
Amount	Whole milk shipped to Pittsburg.

Name	G. W. Watts.
Address	Footville, Ashtabula Co., O., R. F. D.
Cows	900.
Amount	Cream shipped to Pittsburg.

Name	H. R. Norris.
Address	Rome, Ashtabula Co., O.
Cows	500.
Amount	Milk shipped to Pittsburg.

Name	W. M. Paxton.
Address	Windsor, Ashtabula Co., O.
Cows	1,000.
Amount	Butter and cream.

Name	E. C. Much.
Address	Mesopotamia, Trumbull Co., O.
Cows	800.
Product	Cheese 9 months. milk shipped 3 months.

Name	A. W. Griffing.
Address	West Andover, Ashtabula Co., O.
Cows	1,500.
	Cheese 8 months; milk shipped 4 months.

Name	L. P. Watts.
Address	Andover, Ashtabula O., R. F. D.
Cows	800.
	Cream and milk shipped to Pittsburg.

Name	Thomas Crawford.
Address	Garfield, Mahoning Co., O.
Cows	1,000.
	Cream and milk shipped to Pittsburg.

Name	Mechanicsburg Creamery Co.
Owner	Fred Neer.
Manager	Fred Neer.
Address	Mechanicsburg, Champaign Co., O.
Product	Butter.
Amount	13,000 pounds butter per year.

Name ....Medina Creamery Co.
Owner ....Corporation.
Address ....New Sheriff St. Market, Cleveland, O.
Product ....Cream, cottage cheese, and in spring some Jankey cheese.
Amount ....Not given.

SUBSTATION.

Name ....Frank Chumway.
Address ....W. Richfield, Summit Co., O.

Name ....Napoleon Creamery.
Owner ....Ernest Spengler.
Manager ....C. J. Ehrgood.
Address ....Napoleon, Henry Co., O.
Product ....Creamery butter.
Amount ....96,710 pounds per year.

Name ....National Butter Co.
Owner ....Corporation.
Manager ....Thos. F. Walsh, Treas.
Address ....1551 Merwin St., Cleveland, Cuyahoga Co., O.
Product ....Process butter.
Amount ....Not given.

Name ....Nevada Creamery.
Owner ....D. E. Doner.
Manager ....D. E. Doner.
Address ....Nevada, Wyandot Co., O.
Product ....Butter and ship cream.
Amount ....106,960 pounds per year.

Name ....New Springfield Butter Mfg. Co.
Owner ....Corporation.
Manager ....John D. Morrison.
Address ....New Springfield, Mahoning Co., O.
Product ....Butter.
Amount ....40,000 pounds per year.

Name ....New Vienna Creamery Co.
Owner ....Corporation.
Manager ....Geo. Neffner.
Address ....New Vienna, Clinton Co., O.
Product ....Butter.
Amount ....50,000 pounds.

Name ....Oberlin Co-operative Cheese Factory.
Owner ....Co-operative company.
Manager ....Geo. Wack.
Address ....Oberlin, Lorain Co., O.
Product ....Cheese.
Amount ....26,051 pounds.

SUBSTATIONS.

Cows	60.
Amount	$3,264.

Name	Ohio Dairy Co.
Owner	Corporation.
Manager	F. A. Page.
Address	Toledo, Lucas Co., O.
Product	Butter, ice cream, wholesale and retail milk business.

SUBSTATIONS.

Address	Oak Shade, Fulton Co., O.
Product	Cheese.

Address	East Gorham, Fulton, Co., O.
Product	Cheese.

Address	Ambuse, Fulton Co., O.
Product	Cheese.

Name	Pamytuning Cheese Factory.
Owner	Corporation; patrons stockholders.
Manager	E. L. Frazier, sec'y. and treas.
Address	Kinsman, Trumbull Co., O.
Product	Cheese.
Amount	80,000 pounds per year.

Name	Pandora Elgin Butter Co.
Owner	Corporation.
Manager	Tony Frantz.
Address	Pandora, Putnam Co., O.
Product	Creamery extra.
Amount	50,000 pounds butter per year.

Name	Pickerington Elgin Butter Co.
Owner	Co-operative.
Manager	Alex. M. Smith, sec'y.
Address	Pickerington, Fairfield Co., O.
Product	Butter.
Amount	38,165 pounds per year.

Name	Piketon Creamery Co.
Owner	Corporation.
Manager	John J. Rheinfrank.
Address	Piketon, Pike Co., O.
Product	Butter, cream, milk, etc.
Amount	30,000 pounds butter.

Name	Pioneer Elgin Creamery Co.
Owner	Co-operative.
Manager	W. F. Kesler, sec'y.
Address	Pioneer, Williams Co., O.
Product	Creamery butter.
Amount	24,000 pounds per year.

Name ....Piqua creamery.
Owner ....W. E. Henderson.
Manager ....Not given.
Address ....Piqua, Miami Co., O.
Product ....Butter and cream.
Amount ....$40,000 per year.

SUBSTATION.

Name ....Jos. Black.
Address ....Houston, Shelby Co.
Product ....500,000 pounds milk per year.

Name ....Pure Milk Co.
Owner ....J. J. Cranston.
Manager ....J. J. Cranston.
Address ....614 John St., Portsmouth, Scioto Co., O.
Product ....Milk and cream.
Amount ....1,500,000 pounds per year.

Name ....Pure Milk and Dairy Co.
Owner ....C. Hatcher.
Manager ....E. L. Hatcher.
Address ....Tiffin, Seneca Co., O.
Product ....Bottled milk, butter and ice cream.
Amount ....$30,000 per year.

SUBSTATION.

Name ....Pure Milk and Dairy Co.
Address ....Bloomville, Seneca Co., O.
Cows ....150.
Amount ....Not given.

Name ....Pure Milk Co.
Owner ....Corporation.
Manager ....Jacob Mandery.
Address ....Columbus, Franklin Co., O.
Product ....Milk, cream, buttermilk, butter, ice cream and cottage cheese.
Amount ....3,500 gallons milk daily.

Name ....Racine Creamery.
Owner ....Corporation.
Manager ....J. C. Pickens.
Address ....Racine, Meigs Co., O.
Product ....Butter.
Amount ....34,674 pounds per year.

Name ....Edw. E. Reick Co.
Owner ....Corporation.
Manager ....Chr. Ruchti.
Address ....Kinsman, O.
Product ....Milk, cream and some cheese
Amount ....120,000 pounds per year.

SUBSTATIONS.

Name ....Stanhope Creamery.
Address ....Kinsman, O.

Name ....Farmdale Creamery.
Address ....Kinsman, O.

Name ....Barclay Creamery.
Address ....Kinsman, O.

Name ....Simons Creamery.
Address ....Simons, O.

Name ....Nutwood Creamery.
Address ....Fowler, O.
Amount ....Included above.

Name ....Shera Condensing Co.
Owner ....C. H. & W. H. Shera.
Address ....Oxford, Butler Co., O.
Product ....Condensed milk.
Amount ....30,000 gallons per year.

Name ....Silver Creek Cheese Factory.
Owner ....Frank Hurd & Co.
Manager ....Carl B. Ford.
Address ....Aurora, Portage Co., O.
Product ....Cheese.
Amount ....60,000 pounds per year.

SUBSTATIONS.

Operator ....Frank Hurd & Co.
Address ....Shalersville, Portage Co., O.
Cows ....300.
Amount ....50,000 pounds per year.

Operator ....Frank Hurd & Co.
Address ....Parkman, Geauga Co., O.
Cows ....700.
Amount ....120,000 pounds per year.

Operator ....Frank Hurd & Co.
Address ....South Newbury, Geauga Co., O.
Cows 450
Amount ....75,000 pounds per year.

Operator ....Frank Hurd & Co.
Address ....West Richfield, Summit Co., O.
Cows ....450.
Amount ....80,000 pounds per year.

Operator ....Frank Hurd & Co.
Address ....Peninsula, Summit Co., O.
Cows ....250.
Amount ....40,000 pounds per year.

Name	Spring Water Butter Factory.
Owner	J. M. Connell.
Manager	J. M. Connell.
Address	Reynoldsburg, Franklin, Co., O.
Product	Butter.
Amount	50,000 pounds per year.

Name	Star Cheese Factory & Creamery.
Owner	W. E. Owen.
Manager	W. E. Owen.
Address	Parkman, Geauga Co., O.
Product	Cheese, cream and cottage cheese.
Amount	170,725 pounds cheese; 10,500 gallons cream; 11,000 gallons cottage cheese yearly.

Name	Star Creamery Co.
Owner	Corporation.
Manager	E. P. Moweny.
Address	Monroeville, Huron Co., O.
Product	Cream, butter and ice cream.
Amount	$16,870 per year.

Name	Shanahan Bros. Co., Owners.
Manager	F. F. Shanahan.
Address	Cleveland, O.
Product	Cream, butter, milk, skim milk, cheese. No plant at Cleveland; manage following:

SUBSTATIONS.

Operator	Chas. Clark.
Address	Mantua Station, Portage Co., O.
Operator	Geo. Myers.
Address	Mantua Station, Portage Co., O., R. F. D.
Operator	Frank Olds.
Address	Chagrin Falls, Cuyahoga Co., O.
Amount	Not given.

Name	Sugar Loaf Dairy.
Owner	Sears & Nichols Co.
Secretary	C. H. Sears.
Address	Chillicothe, Ross Co., O.
Product	Milk, cream and butter.
Amount	82,000 gallons milk per year.
Cows	101.

Name	Summit City Creamery.
Owner	Kramer & Dickman Creamery Co.
Manager	C. H. Dickman.
Address	Minster, Auglaize Co., O.
Product	Creamery butter.
Amount	242,823 pounds butter per year.

SUBSTATIONS.

Operator	H. Steinebrugge.
Address	New Knoxville, Auglaize Co., O.
Amount	200,000 pounds butter per year.

Operator	John Lehmkuhle.
Address	McCartyville, R. F. D., Anna, Shelby Co., O.
Amount	Delivers to Minster, O.

Name	John Ratermann.
Address	Loramie, Shelby Co., O.
Amount	Delivered to Minster, O.

Operator	Henry Kruse.
Address	Moulton, R.F.D., Wapakoneta, Auglaize Co.,O.
Amount	Delivered to New Knoxville.

Operator	Leo Neddermann.
Address	New Bremen, Auglaize Co., O., R. F. D.
Amount	Delivered to New Knoxville, O.

Name	Summit Creamery Co.
Owner	Corporation.
Manager	F. M. Layton.
Address	Summit Station, Licking Co., O.
Product	Creamery butter.
Amount	100,000 pounds per year.

SUBSTATION.

Operator	C. R. Fishbaugh.
Address	Pataskala, Licking Co., O., R. F. D. No. 4.
Amount	Included in above.

Name	Tedrow Cheese Factory.
Owner	C. M. Spring.
Manager	H. Partridge.
Address	Tedrow, Fulton Co., O.
Product	Full cream Spring Hill cheese.
Amount	70,000 pounds per year.

SUBSTATIONS.

Name	W. E. Huyck.
Address	Wauseon, Fulton Co., O.
Cows	200.
Amount	80,000 pounds.

Name	A. L. Partridge.
Address	Fayette, Fulton Co., O.
Cows	200.
Amount	80,000 pounds per year.

Name ....Triumph Dairy Co.
Owner ....E. S. Rice, H. L. Rice, Caroline B. Rice.
Manager ....E. S. Rice.
Address ....Lockwood, Trumbull Co., O.
Product ....Cheese, butter, cream and cottage cheese.
Amount ....233,744 pounds cheese, 15,204 butter, 8,275 gallons cream, 48,938 pounds cottage cheese per year.
Cows ....900.

Name ....Underhill Creamery Co.
Owner ....R. T. Underhill.
Manager ....R. T. Underhill.
Address ....Lester, Medina Co., O.
Product ....Butter.
Amount ....393,161 pounds per year.
Skimming stations at Litchfield and Liverpool.

Name ....Union Cheese Co.
Owner ....Corporation.
Manager ....A. A. Alpeter, sec'y.
Address ....Sugar Creek, Tuscarawas Co., O., R. F. D. 2.
Product ....Swiss cheese and butter.
Amount ....$12,000 per year.

SUBSTATION.

Operator ....Jacob Buhler, cheesemaker.
Address ....Sugar Creek, Tuscarawas Co., O., R. F. D. 2.
Cows ....200.
Product ....121,640 pounds milk per year.

Name ....Union Hill Dairy Co.
Owner ....C. Sauser.
Secretary ....C. Sauser.
Address ....Sugar Creek, Tuscarawas Co., O.
Product ....Swiss cheese and whey butter.
Amount ....48,000 pounds cheese, 2,700 pounds butter yearly

Name ....Urbana Separator Creamery.
Owner ....Dallas and George McCrery.
Address ....Urbana, Champaign Co., O.
Product ....Milk, cream and butter.
Amount ....$40,000 per year.

Name ....Valley Farm Creamery.
Owner ....Theo. L. Garber & Son.
Manager ....E. G. Garber.
Address ....Bellville, Richland Co., O.
Product ....Butter, pasteurized cream.
Amount ....80,000 pounds butter fat handled per year.

Name	Vernon Cheese Factory.
Owner	J. B. Biggin.
Address	Kinsman, O., R. F. D. No. 3.
Product	Cheese, full cream.
Amount	120,000 pounds per year.

Name	Western Ohio Creamery Co.
Owner	Corporation.
Manager	J. O. Winters.
Address	Greenville, Darke Co., O.
Product	Butter.
Amount	1,200,000 pounds per year.

SUBSTATIONS.

Operator	Arthur McDonald.
Address	St. Henry, Mercer Co., O.

Operator	Lawrence Wolf.
Address	Spring Valley, Greene Co., O.

Operator	M. C. Smith.
Address	New Burlington, Clinton Co., O.

Operator	Chas. J. Smith.
Address	Eaton, Preble Co., O.

Operator	A. L. Riley.
Address	West Manchester, Preble Co., O.

Name	Western Reserve Condensed Milk Co.
Owner	Haserot Canneries Co.
Manager	W. A. Bartshe.

Address	Kent, Portage Co., O.
Product	Fresh milk, cream, condensed milk.
Amount	2,184,000 pounds milk per year.

Name	West Jefferson Creamery.
Owner	West Jefferson Creamery Co.
Manager	D. A. Crowner.
Address	419 East Capitol St., Columbus, O.
Product	Butter, buttermilk, milk and cream.
Amount	178,317 pounds butter, 42,000 pounds butter fat in sweet cream and milk.

Name	White Mountain Creamery.
Owner	Louis Huenke.
Manager	C. V. Huenke.
Address	New Bremen, Auglaize Co., O.
Product	Butter.
Amount	500,000 pounds per year.

SUBSTATIONS.

Operator	Chas. E. Steinebrey.
Address	St. Marys, Auglaize Co., O.
	Sanitary milk plant and creamery.

Operator	Louis Kuck.
Address	Kettlerville, Shelby Co., O.
	Skim station.

Operator	John B. Gracely.
Address	Spencerville, Allen Co., O.
	Hand separator receiving station.

Operator	Chas. Eifert.
Address	Maria Stein, Mercer Co., O.
	Hand separator company.

Operator	Chas. W. Sullivan.
Address	Wapakoneta, Auglaize Co., O.
	Hand separator cream receiving station.

Name	Wholesale Ice Cream Factory.
Owner	Maurice Hart.
Manager	Maurice Hart.
Address	Columbus, O.
Product	Ice cream.

Name	Wilson's Jersey Creamery.
Owner	F. M. Wilson.
Address	Selma, Clark Co., O.
Product	Cream and butter.

Name	Winona Creamery Co.
Owner	Corporation.
Manager	W. A. Bartshe.
Address	Kent, Portage Co., O.
Product	Fresh milk, cream, butter, condensed milk.
Amount	3,458,000 pounds fresh milk per year.

Name	Worthington Creamery Co.
Owner	Corporation.
Manager	W. D. Sims; S. B. Babbit, sec'y.
Address	Worthington, Franklin Co., O.
Product	Butter.
Amount	67,000 pounds per year.

Name	Yellow Creek Creamery.
Owner	Yellow Creek Creamery and Cheese Co.
Secretary	S. W. Ganyard.
Address	Medina, Medina Co., O.
Product	Butter.
Amount	3,664,387 pounds milk, 156,334 pounds butter fat, 182,394 pounds butter per year.

Name	Zorn Hornung Co.
Owner	Corporation.
Manager	F. C. Hornung.
Address	Gibsonburg, Sandusky Co., O.
Product	Butter.
Amount	125,000 pounds per year.

LIST OF NAMES AND ADDRESSES ONLY, OF DAIRY CONCERNS OF OHIO.

Address.	Name of Concern.
Adair, Ohio	Humphrey Cheese Factory.
Akron, Ohio	B. B. McNeil & Co.
Alliance, Ohio	Alliance Cheese Co.
Alliance, Ohio	Alliance Cheese Factory.
Alliance, Ohio	Eyers Cheese Factory.
Anna, Ohio	The Anna Creamery.
Apple Creek, Ohio	Apple Creek Cheese Factory.
Apple Creek, Ohio	Fountain Cheese Factory.
Apple Creek, Ohio	C. Graber Cheese Factory.
Archbold, Ohio	Mockler & Waldvogl.
Augusta, Ohio	M. O. Leyda Creamery.
Aurora, Ohio	C. R. Harmon & Sons.
Axtel, Ohio	Axtel Cheese Factory.
Bakersville, Ohio	The Slarp Cheese Factory.
Bakersville, Ohio	White Eyes Cheese Factory.
Baltic, Ohio	Halifax Cheese Co.
Baltic, Ohio	Lang Cheese Factory.
Baltic, Ohio	The Wolf Cheese Factory.
Barnesville, Ohio	Barnesville Milk Depot.
Barnesville, Ohio	United Dairy Co.
Basil, Ohio	H. C. Belt.
Bath, Ohio	Bath Cheese Factory.
Beloit, Ohio	B. E. Zurbrugg Cheese Factory.
Beloit, Ohio	C. Frithart Cheese Factory
Beloit, Ohio	Detchon & Taylor.
Beloit, Ohio	Dutchens Cheese Factory.
Beloit, Ohio	Foog Cheese Co.
Beloit, Ohio	Harlan Cheese Factory.
Beloit, Ohio	John Oech Creamery Co.
Beloit, Ohio	The Beloit Creamery Co.
Beloit, Ohio	The Buckeye Cheese Co.
Beloit Ohio	The Grove Cheese Factory.
Beloit, Ohio	The J. Bandy Cheese Co.
Beloit, Ohio	The J. Herren Cheese Factory.
Beloit, Ohio	The Mile Branch Cheese Factory.
Beloit, Ohio	The Shenke Cheese Co.
Beloit, Ohio	Stanley & Grove Cheese Factory.
Beloit, Ohio	State Road Cheese Factory.
Beloit, Ohio	The Yaggi Cheese Co.
Beloit, Ohio	West Hill Cheese Factory.

Address.	Name of Concern.
Bellefontaine, Ohio	Bellefontaine Pure Milk Co.
Benton, Ohio	The S. Warren Cheese Factory.
Berlin Center, Ohio	Hartzell Cheese Factory.
Big Prairie, Ohio	E. W. Miles.
Birmingham, Ohio	The Portland Cheese Co.
Blackband, Ohio	Roser Dairy Co.
Blackband, Ohio	The Bealer Cheese Co.
Black Run, Ohio	Black Run Creamery Co.
Bloom Center, Ohio	Bloom Center Skim Station.
Boneta, Ohio	The Boneta Cheese Factory.
Botkins, Ohio	Cloverdale Creamery.
Brice, Ohio	Brice Skim Station.
Brunswick, Ohio	The Brunswick Creamery.
Buckeye City, Ohio	C. W. Parish.
Burton, Ohio	Spring Brook Cheese Factory.
Byhalia, Ohio	Byhalia Creamery Co.
Butler, Ohio	Butler Creamery Co.
Cable, Ohio	McClelan & Son.
Cable, Ohio	The Cable Cheese Factory.
Canal Dover, Ohio	The Intermill Dairy.
Catawba, Ohio	Catawba Creamery.
Catawba, Ohio	Wingate Cheese Factory.
Canton, Ohio	Canton Sanitary Milk Co.
Canton, Ohio	C. A. Pontius Milk Co.
Centerburg, Ohio	J. Jeppsen.
Chagrin Falls, Ohio	Beech Glen Cheese Factory.
Chatfield, Ohio	A. Muth.
Cherry Valley, Ohio	Clover Hill Cheese Factory.
Chicago, Ill.	Blue Valley Creamery Co.
Chili, Ohio	Chili Cheese Factory.
Chili, Ohio	Henry Slarp Cheese Factory.
Chillicothe, Ohio	Sears & Nichols.
Circleville, Ohio	J. T. Bentley & Son.
Cleveland, Ohio	Bell, Vernon, Mapes Co.
Cleveland, Ohio	Ed. Mott & Co., 3205 Cedar Ave.
Cleveland, Ohio	Landers & Phillips, Kinsman St.
Cleveland, Ohio	Ohio Creamery & Supply Co.
Cleveland, Ohio	Stranahan Bros. Catering Co.
Cleveland, Ohio	South Russel Cheese Factory, Kinsman St
Colebrook, Ohio	Colebrook Cheese Factory.
Coolville, Ohio	Coolville Co-operative Creamery Co.
Columbia Center, Ohio	Columbia Center Cearmery Co.
Columbus, Ohio	A. H. Gies Produce Co.
Columbus, Ohio	Busy Bee (Ice Cream Department).
Columbus, Ohio	Capital City Dairy Co.
Columbus, Ohio	Moore & Ross.
Columbus, Ohio	S. T. Budd & Co., Wesley Ave.
Columbiana, Ohio	Mr. Jones Felger.
Columbiana, Ohio	W. C. Rummel.
Cork, Ohio	F. S. Leslie.
Cuyahoga Falls, Ohio	Stowe Creamery.
Cuyahoga Falls, Ohio	Elgin Butter & Ice Cream Co.

Address.	Name of Concern.
Danville, Ohio	Danville Creamery Co.
Dayton, Ohio	Dayton Pure Milk Co.
Defiance, Ohio	Geo. Ferguson Dairy.
DeGraff, Ohio	DeGraff Creamery Co.
DeGraff, Ohio	Farmers' Co-operative Butter & Cheese Co.
Dodgeville, Ohio	Lebanon Valley Creamery Co.
Eagleville, Ohio	Alleghany Creamery Co., Mr. Woodsworth, Sec
East Claridon, Ohio	R. C. Labar.
East Liberty, Ohio	Haines & Brugler Cheese Factory.
East Liberty, Ohio	Moore & Son.
East Rochester, Ohio	East Rochester, Creamery Co.
Edison, Ohio	C. O. Wells & Co.
Ellsworth, Ohio	David Allen.
Fairview, Ohio	L. P. Bailey & Sons.
Farmerstown, Ohio	Harmon Cheese Co.
Freeburg, Ohio	Ruflin Cheese Factory.
Freeburg, Ohio	C. Krahbil Cheese Factory.
Fiat, Ohio	Cline Cheese Factory.
Fremont, Ohio	Fremont Creamery Co.
Fostoria, Ohio	Fostoria Creamery Co.
Gahanna, Ohio	Gahanna Dairy Co.
Grafton, Ohio	Davis & Waite.
Grafton, Ohio.	Maple Grove Skim Station.
Granger, Ohio	Granger Cheese Factory.
Geauga, Ohio	Geauga Lake Creamery.
Georgetown, Ohio	Eli Oesch Cheese Co.
Georgetown, Ohio	Hohlens Cheese Factory.
Ghent, Ohio	Yellow Creek Creamery.
Greenwich, Ohio	C. E. Benedict.
Greenwich, Ohio	E. S. Bell.
Greenwich, Ohio.	J .S. Miller
Greensburg, Ohio	Emerald Cheese Factory.
Greenwich, Ohio	Chas. Hopkins.
Greenwich, Ohio	John Milans.
Gretna, Ohio	Gretna Skim Station.
Hagerman, Ohio	Rossville, Creamery.
Hamilton, Ohio	Fretching Dairy Co.
Hartsgrove, Ohio	Hartsgrove Cheese Factory.
Harrisville, Ohio	Lewis Hall.
Hartwell, Ohio.	B. Paddock.
Helena, Ohio	Helena Creamery Co.
Homeworth, Ohio	Weaver & Stoffer.
Huston, Ohio	Huston Creamery Co.
Jackson Center, Ohio	Farmer's Co-operative Creamery.
Janera, Ohio	Bosse Bros.
Jewell, Ohio	C. W. Palmer.
Joyce, Ohio	Ernig Cheese Factory.
Johnstown, Ohio	J. B. DeWolf.
Kenton, Ohio.	Kenton Creamery Co.
Kettersville, Ohio	Kettersville Skim Station.
Kidron, Ohio	Kidron Cheese Co.
Killbuck, Ohio	Killbuck Creamery.
Kipton, Ohio	Herrick Creamery Co.

Address.	Names of Concern.
Lancaster, Ohio	B. F. Antil.
Lebanon, Ohio	French Bros.
Lena, Ohio	Geo. Cox.
Lexington, Ohio	Frye Condensing & Caramel Co.
Liberty Center, Ohio	Buchele Bros.
Liberty Center, Ohio	Steward Cheese Factory.
Lima, Ohio	Herrington Bros.
Lodi, Ohio	Miller & Horr Warner.
Lorain, Ohio	The Betz Dairy.
Lorain, Ohio	South Lorain Dairy.
Louisville, Ohio	Chenot Cheese Factory.
Louisville, Ohio	Joseph Shillic Cheese Factory.
Lyons, Ohio	Lyons Cheese Factory.
Lynchburg, Ohio	H. Henderson.
Mansfield, Ohio	Mansfield Pure Milk Co.
Mantua Station, Ohio	Mantua Corners Cheese Factory.
Mantua Station, Ohio	Smith Creamery Co.
Mantua Station, Ohio	White Clover Cheese Factory.
Marengo, Ohio	F. F. Wyman.
Marion, Ohio	Marion Pure Milk & Butter Co.
Massillon, Ohio	McCullough Heights Dairy Co.
Maximo, Ohio	Hahlen's Cheese Factory.
Maximo, Ohio	Hoover Cheese Factory.
Maximo, Ohio	Maximo Cheese Factory.
Maximo, Ohio	C. Reber Cheese Factory.
Mecca, Ohio	East Mecca Cheese Factory.
Medina, Ohio	Medina Creamery Co.
Metz, Ohio	Bienz Cheese Factory.
Middlefield, Ohio	Middlefield Cheese Factory.
Middletown, Ohio	Bannockburn Milk Station.
Milford Center, Ohio	Milford Center Creamery.
Millersburg, Ohio	Martins Creek Cheese Factory.
Millersburg, Ohio	Millersburg Creamery Co.
Millport, Ohio	E. H. Riggs.
Minerva, Ohio	Minerva Creamery Co.
Mingo, Ohio	Mingo Creamery Co.
Montpelier, Ohio	Spring Brook Creamery.
Montpelier, Ohio	Montpelier Dairy Co.
Mount Liberty, Ohio	Little Walnut Skim Station.
Mt. Eaton, Ohio	F. Nichols Cheese Factory.
Mt. Gilead, Ohio	N. Merwin & Son, R. F. D. No. 3.
Napoleon, Ohio	Napoleon Creamery Co.
Newark, Ohio	Licking County Creamery Co.
New Albany, Ohio	Johnston & Cairey.
New Alexandria, Ohio	Sanor's Cheese Factory.
New Alexandria, Ohio	Wolfe Cheese Factory.
Newburg, Ohio	North Ohio Milk Producers Association.
New Bedford, Ohio	Dietch Cheese Factory.
New Buffalo, Ohio	Beard Creamery Co.
New Carlisle, Ohio	Smith & McCoy.
New Carlisle, Ohio	New Carlisle Creamery Co.
New Chambersburg, Ohio	New Chambersburg Cheese Factory.
New Concord, Ohio	New Concord Creamery Co.

Address.	Name of Concern.
New Madison, Ohio	Cossairt & Royer.
New Middletown, Ohio	New Middletown Creamery Co.
New Philadelphia, Ohio	Frys' Valley Cheese Factory.
New Philadelphia, Ohio	May Dairy Co.
New Philadelphia, Ohio	Steinter Cheese Factory.
New Waterford, Ohio	F. A. Richards.
New Waterford, Ohio	J. A. Richards.
North Amherst, Ohio	Geo. Hollstein.
North Bloomfield, Ohio	Triumph Dairy Co.
North Bristol, Ohio	North Bristol Cheese Factory.
North Eaton, Ohio	North Eaton Creamery Co.
North Georgetown, Ohio	Berger Cheese Factory.
North Georgetown, Ohio	Bridgewater Cheese Factory.
North Georgetown, Ohio	North Georgetown Cheese Factory.
North Georgetown, Ohio	Weaver Cheese Factory.
North Georgetown, Ohio	Weiss Cheese Co.
North Georgetown, Ohio	Oesch Cheese Factory.
North Lima, Ohio	Gilt Edge Butter Co.
North Lima, Ohio	North Lima Creamery Co.
North Lima, Ohio	S. O. Harmon.
Novelty, Ohio	River Cheese Factory.
Oak Harbor, Ohio	Oak Harbor Creamery.
Orangeville, Ohio	Orange Cheese Factory.
Orrville, Ohio	G. Souser Cheese Factory.
Orwell, Ohio	C. H. Paine.
Parkman, Ohio	Parkman Creamery.
Pearl, Ohio	Pearl Cheese Factory.
Pemberville, Ohio	Pemberville Creamery Co.
Peninsula, Ohio	Cottage Creamery Co.
Perry, Ohio	Perry Milk & Cheese Co.
Petersburg, Ohio	Petersburg Creamery Co.
Pettisville, Ohio	Pettisville Creamery.
Phalanx, Ohio	Eagle Creek Creamery.
Phalanx, Ohio	Phalanx Creamery Co.
Phalanx, Ohio	Valley Forge Milk Co.
Pierpont, Ohio	P. H. Watson & Co.
Pittsburg, Pa	W. L. Fuhet.
Pittsburg, Pa	Edward E. Reick Creamery Co.
Pittsburg, Pa	Ohio-Pittsburg Milk Co.
Poland, Ohio	Poland Creamery Co.
Ragersville, Ohio	E. Ladrach Cheese Factory.
Ragersville, Ohio	Espenhied Cheese Factory.
Ragersville, Ohio	Gerber Cheese Factory.
Ragersville, Ohio	G. Ladrach Cheese Factory.
Ragersville, Ohio	Steiner Cheese Factory.
Raymond, Ohio	Brinnon & Sons.
Raymond, Ohio	Evans & Phipps.
Richfield, Ohio	H. F. & O. A. Wood.
Richwood, Ohio	Richwood Creamery Co.
River Styx, Ohio	River Styx Creamery Co.
Rosewood, Ohio	Strayer & Huffman.
Rossburg, Ohio	Rossburg Dairy Co.
Rootstown, Ohio	Springdale Cheese Factory.

Address.	Name of Concern.
Royalton, Ohio	A. D. Wyman.
Rushsylvania, Ohio	Rushsylvania Co-operative Creamery Co.
Sabina, Ohio	J. B. Wilson.
Salem, Ohio	H. M. Car.
Salem, Ohio	Salem Creamery Co.
Salem, Ohio	Valley Creamery, R. F. D. No. 1.
Science Hill, Ohio	Science Hill Creamery Co.
Scroggsfield, Ohio	E. Fauri.
Shanesville, Ohio	Sliffe Cheese Factory.
Shreve, Ohio	Pittsburg Creamery.
Sidney, Ohio	Sidney Creamery.
Spencer, Ohio	White Rose Creamery.
Springfield, Ohio	R. D. Hunt.
Spring Hill, Ohio	C. W. Strayer.
Spring Valley, Ohio	Rutan Bros.
Steubenville, Ohio	Steubenville Pure Milk Co.
Streetsboro, Ohio	Clover Hill Cheese Factory.
St. Paris, Ohio	J. S Sailor.
Sugar Creek, Ohio	Gottfried Frutig.
Sugar Creek, Ohio	Krebs Cheese Factory.
Sugar Creek, Ohio	Wingier Cheese Factory.
Sunbury, Ohio	Sunbury Co-operative Creamery Co.
Swanton, Ohio	Wilcox Bros.
Tacoma, Ohio	L. P. Bailey.
Tacoma, Ohio	Olney Creamery Co.
Thackery, Ohio	Thackery Co-operative Creamery Co.
Thompson, Ohio	R. M. Smith.
Toledo, Ohio	The Ohio Dairy Co.
Toledo, Ohio	J. R. Ryder.
Toledo, Ohio	Rockland Butter Co.
Trail, Ohio	Trail Cheese Factory.
Triumph, Ohio	Triumph Dairy Co.
Twinsburg, Ohio	John Martig.
Upper Sandusky, Ohio	Black & Black.
Vanatta, Ohio	Vanatta Pure Milk Co.
Van Wert, Ohio	H. E. Rutan
Walnut Creek, Ohio	J. Y. Miller Cheese Factory.
Warren, Ohio	Warren Creamery Co.
Warsaw, Ohio	Warsaw Creamery.
Washington C. H., Ohio	J. Rutan.
Wauseon, Ohio	Advance Cheese Factory.
Wauseon, Ohio	Wauseon Condensery.
Wayland, Ohio	Mahoning Valley Creamery.
Wellsville, Ohio	Wellsville Pure Milk Co.
West Amherst, Ohio	Henrietta Cheese Factory.
Westerville, Ohio	Johnson & Son Creamery.
West Farmington, Ohio	Silver Creek Cheese Factory.
West Farmington, Ohio	West Farmington Creamery Co.
West Liberty, Ohio	The Hillside Cheese Factory.
West Mansfield, Ohio	West Mansfield Creamery Co.
West Salem, Ohio	Albion Cheese Factory.
West Unity, Ohio	West Unity Elgin Creamery Co.
Weymouth, Ohio	Weymouth Creamery.

Address.	Name of Concern.
Wheeling, W. Va.	Wheeling Dairy Co.
Wilmington, Ohio	Clinton Creamery.
Williamsfield, Ohio	Pymatuning Milk Co.
Windham, Ohio	Hudson Cheese Factory.
Winesburg, Ohio	Winesburg Dairy Co.
Winesburg, Ohio	Seven Lick Cheese Factory.
Winona, Ohio	Winona Creamery Co.
Woodville, Ohio	Woodville Creamery Co.
Youngstown, Ohio	Beard Creamery Co.
Zanesville, Ohio	Muskingum Elgin Butter Co.
Zanesville, Ohio	Zanesville Pure Milk Co.

MEMBERSHIP ROLL.

(The membership has increased 109 names.)

Alspach, Jas. A., Canal Winchester, O.
Allison, A. J., R. F. D. No. 1, Newark, O.
Anthony, Randolph, 377 King Ave., Columbus, O.
Arnold, M., Cottage Creamery Co., Cleveland, O.
Aydelotte, O. T., Campbellstown, O.

Bacon, B. E., Chagrin Falls, O.
Bailey, A. C., Tacoma, O.
Bailey, John S., Farmdale, O.
Bailey, L. P., Tacoma, O.
Bangham, W. J., Wilmington, O.
Bell, Herbert C., R. F. D. No. 1, Springfield, O.
Ball, F. C., Mt. Vernon, O.
Bennett, Otis, Twinsburg, O.
Bentley, Geo., Circleville, O.
Bentley, J. T., Circleville, O.
Bentley, O. P., Circleville, O.
Bocon, A. L., Wellington, O.
Boggs, Samuel, Circleville, O.
Boltz, G. E., 67 W. 10th Ave., Columbus, O.
Brewer, R., Ohio Creamery & Dairy Supply Co., Columbus, O.
Brotherton, C. F., Ashtabula, O.
Brooks, A. T., Macedonia, O.
Budd, S. T., Dairy Co., 1390 Wesley Ave., Columbus, O.
Burg, E. J., Cleveland, O.
Bundy, C. Ellis, Barnesville, O.
Brunson, A. L., DeGraff, O.
Burckhart, C. M., Circleville, O.
Byers, A. G., Westerville, O.

Carlisle, W. M., Gambier, O.
Carmichael, B. C., Wooster, O.
Carpenter, M. L., R. F. D., Wellington, O.
Chambers, I. E., Mansfield, O.
Clevenger, Wm. L., Ohio State University, Columbus, O.
Condit, J. S., Condit, O.
Conkle, C., Coshocton, O.
Cotner, Eli, Seville, Medina Co., O.
Courtright, Silas, Lancaster, O.
Cowan, C. F., Bedford, O.
Cowan, H. E., Lebanon, O.
Cooley, W. V., Georgesville, O.
Cranston, J. J., 616 John St., Portsmouth, O.
Croft, Wm. C., R. F. D. No. 1, East Liverpool, O.
Crowner, D. A., Columbus, O.
Croomer, Lee, Hebron, O.

Darfus, Geo., Pleasantville, O.
Davis, Bedford, O.
Davis, W. W., Newark, O.
Davis, C. H., Newark, O.
Dawley, F. E., Fayetteville, N. Y.
Degenfelder, Chas., Swanton, O.
Dempsey, Thomas, Westerville, O.
Derrer Bros., Camp Chase, O.
Dewey Bros., Blanchester, O.
Dewey, Harper, Sidney, N. Y.
Dill, F. P., Westerville, O.
Dinsmore, J. W., Osborne, O.
Dorsey, W. A., Shepard, O.
Doyle, P. W., Hudson, O.
Dunlap, R. W., Columbus, O.
Dunlap & Morris, Kingston, O.
Dunn, Bert, 1422 E. 86th St., Cleveland. O.
Dutton, Herbert P., Hockingport, O.

Eldridge, W. J., Aurora, O.
Elwood, E. M., 1333 E. 82d St., Cleveland, O.
Embick, Mrs. Chas. W., Lancaster, O.
Erf, O., Ohio State University, Columbus, O.
Erf, Wm., Monroeville, O.
Erf, L., Monroeville, O.
Evans, W. Z., Delaware, O.

Fisk, W. W., The Hattersley, Toledo, O.
Forbes, W. H., Yellow Springs, O.
Ford, C. W., New Springfield, O.
Foster, T. B., Foster, O.
Francis, C. E., Station E, R. F. D. No. 6, Columbus, O.

Gammill, C. E., Lebanon, O.
Geis, A H., 304 Columbus, O.
Geissman, J. E., New Washington, O.
Gibson, Herbert, Camp Chase, O.
Gibson, Joseph, 74 Cortlandt street, New York, N. Y.
Gill, Geo. W. (Big Meadows Farm, Mt. Victory, O.), and Columbus, O.
Groves, H. J., R. F. D. No. 1, Reynoldsburg, O.
Gooding, Stanley, R. F. D. No. 3, Westerville, O.
Guthrie, E. S., Columbus, O.

Hamilton, W. R., Grove City, O.
Hampson, James, Pleasantville, O.
Hartman Stock Farm Dairy (F. W. Shaffer), Columbus, O.
Hassel, E. D., Somerset, O.
Herrick, A., Twinsburg, O.
Herrick, B. B. Wellington, O.
Herrick, Henry, Twinsburg, O.
Hodges, Geo., Burton, O.
Holl, E. D., Upper Sandusky, O.
Holloway, Chas., Barnesville, O.
Holloway, John, Bellaire, O.

Horr Bros., Leesburg, O.
Horst, D. H., Dalton, Wayne Co., Ohio.
Hoskins, Clarence, 1124 Neil Ave., Columbus, O.
Hoyt, E. W., 1061 Neil Ave., Columbus, O.
Hudson, J. F., Windham, O.
Huenke, C. V., New Bremen, O.
Hurr, D. W., Bucyrus, O.
Hyslop, Geo. L., Deshler, O.

Independent Oil and Supply Co., 172 Washington St., Chicago, Ill.
Isaly, Wm., Mansfield, O.

Jeppesen, John, Centerburg, O.
Johnson, F. G., Sta. B., Columbus, O.
Johnson, Geo. B., Osborn, O.
Johnston, W. B., Westerville, O.
Jones, Carl M., Columbus, O.
Jones, Thomas H., Granville, O.
Judy, H. E., Germantown, O.

Kennedy, C. O., Richwood, Ind.
Kennedy, H. D., Sta. B, Columbus, O.
Kershner, J. K., Springfield, O.
Kimball, W. D., Toledo, O.
Kielsmeier, O. A., Manitowoc, Wis.
Kramer & Dickman Creamery Co., Minster, O.
Kuehlmann C. L., Vermilion O.

Leedy, E. R., R. F. D. No. 5, Bellville, O.
Leffler, E. F., 2425 E 25th St., Indianapolis, Ind.
Leimenstoll, Bucyrus, O., R. F. D. No. 1.
Lemon, A. C., Dixon, Ills.
Lenhart, C. C., South Zanesville, O.
Lippincott, E. F., East Rochester, O.
Longshore, Clarence, Eldorado, O.
Love, Jas. D., New Bremen, O.
Loodrod, A. W., Vermilion, O.

Macedonia Implement Co., Macedonia, O.
Mangold, E. F., Worthington, O.
Marple, W. W., care Blue Valley Creamery Co., Chicago, Ill.
Martin, Wm., Chardon, O.
Mateer, Jas., Sta. A, Columbus, O.
Matthews, Elzy, Sta. A, Columbus, O.
McConnell, C. M., Woodstock, O.
McConnell, H. E., Milford Centre, O.
McFarland, C. W., Galion, O.
McKee, Geo. H., Xenia, O.
McKeever, Mrs. C. P., Williamsburg, O.
McKeon, J. F., Southern Hotel, Columbus, O.
McNutt, J. C., Hartman Stock Farm, Columbus, O.
McWhirter, R. W., Zanesville, O.
Meyers, Levi, R. F. D. No. 4, Wellington, O.
Miller, E. C., R. F. D. No. 7, Canton, O.
Myer, Chas. F., Beidler, O.

Murray, Alfred J., New Paris, O.
Miller, Geo. A., Gahanna, O.
Miller, J. S., Ellsworth, O.
Minnich, O. W., Gratiot, O.
Monry, E. P., Monroeville, O.
Moore, Loyal T., Edison, O.
Murrey, E. E., Grelton, O.
Murphy, R. A., Hudson, O.
Myers, J. E., Pataskala O.

Neale, A. S., Macedonia, O.
Netherell, Jos., Camp Chase, O.
Newcomb Bros., Burton, O.
New Vienna Creamery Co. (V. D. Kane. Buttermaker), New Vienna, O.
Nichols, J. D., Cleveland, O.
Nixon, W. H., Logan, O.
Null, A. J., Genoa, O.
Nystrom, A. B., 80 West 8th Ave., Columbus, O.

Ohio Farmer (J. Cunningham), Cleveland, O.
Oliver, G. A., Box 342, Columbus, O.
Owen, W. A., Fredericktown, O.

Page, F. L., Warren, O.
Partch, H. C., Gomer, O.
Parker, Lem. O., Findlay, O.
Perkins, R. J., Coolville, O.
Perry, Col., Columbus, O.
Petre, C. H., Springfield, O.
Pettit, C. H., Reynoldsburg, O.
Pontius, Chas. A., R. F. D No. 2, Canton, O.
Pool, L. H., DeGraff, O.
Pontius, Wm. J., Canton, O.
Potter, G. J., Shepard, O.
Pickerington Elgin Butter Co., Pickerington, O.
Pinkvoss, Henry F., Camp Dennison, O.
Price, W. H., Woodville, O.
Phillips, C. F., Chagrin, Falls, O.
Phillips, M. R., Lebanon, O.
Purdum, Geo. W., Sta. A., R. F. D., Columbus, O.
Purdum, Wesley, New Paris, O.

Rayl, J. S., Marion, O.
Rehl, Wm., Zanesville, O.
Roberts, W. C., Galena, O.
Ronk, A. S., Mt. Victory, O.
Rosebraugh, S. H., Hebron O.
Ross, C. B., Pleasant Plain, O.
Ross, J. R., Blanchester, O.
Roules, F. L., Pleasantville, O.
Russell, H. J., Burton, O.
Rutan, Ben. M., Marysville, O.

Schwendenan, F. J., Springfield, O.
Scovell, D. W., Johnstown, O.
Sebekow, H. A., Orrville, O.
Sedgwick, Kim., Sunbury, O.
Seely, A., Camp Chase, O.
Sherman, Howard, Sunbury, O.
Shoaf, D. J., Sta. E, R. F. D. No. 6, Columbus, O.
Shephard, L. C., Springfield, O.
Sigrist, P. H., M. D., New Philadelphia, O.
Siler, L. E., Tiffin, O.
Smith, Bert & Son, Delaware, O.
Smith, Floyd, 607 Knower St., Toledo, O.
Smith, Geo. C., R. F. D. No. 7, Xenia, O.
Smith, L. D., Wellington, O.
Smith, Mrs. Bell, R. F. D. No. 7, Xenia, O.
Sovocoe, E. M., Wheeling, W. Va.
Spear, Jas. A., New Vienna, O.
Staggers, J. F., Powell, O.
St. John, A. F. W., 383 King ave., Columbus, O.
Stormont, H. H., R. F. D. No. 2, Xenia, O.
Stormont, J. E., West Jefferson, O.
Strong, W. H., Swanton, O.
Stout, G. A., R. F. D. No. 3, Delaware, O.
Sumner, J. M., Akron, O.
Surbey, M. O., New Berlin, O.
Sutton, C. E., R. F. D. No. 1, Zanesville, O.
Sutton, J. W., Zanesville, O.

Tarping, E. C., Rush Creek, O.
Throckmorton, W., 622 Linden St., Lima, O.
Tigner, C. M., 701 Linwood Ave., Columbus, O.
Triumph Dairy Co., Lockwood, O.

Underhill, L. J., Salem, Mich.

Vanderbark, Weldon, R. F. D. No. 1, Zanesville, O.
Vanatta, D. R., Piketon, O.
Voigt, Otte Von, 13 N. Clark St., Chicago, Ill.

Walker, J. A., R. F. D. No. 1, Newark, O.
Walters, O. S., Greenford, O.
Watson, W. W., Cleveland, O.
Weir, J. J., Westerville, O.
West Jefferson Creamery Co., Columbus, O.
Webster, E. F., Wellington, O.
Wetmore, Phil. H., Canfield, O.
Wheeler, Miss Maud, Pleasant City, O.
White, Jacob E., Greenfield, O.
White, Mrs. Albert, R. F. D. No. 1, Richwood, O.
White, Mrs. E. P., Hooker, O.
White, T. P., Hooker, O.
Wilcox, H. W., Sta. A, Columbus, O.
Wilcox, B. F., Powell, O.

Wilkerson, H. H., Oregonia, O.
Wilson, F. M., Selma, O.
Winters, J. O., Greenville, O.
Winters, J. R., Greenville, O.
Wright, Thos. S., Lancaster, O.
Worley, Z. O., Morrow, O.

Yokom, O. A., Thompson, O.

Zeigler, W. I., Chicago, Ills.
Zollinger, J. C. Millersport, O.
Zimmerman, Parker, Greenfield, O.

Campbellstown, Ohio, March 4, 1908.

Messrs. C. A. and W. J. Pontius.

Gentlemen: We received the fine Jersey heifer calf that you sent us for the first premium on dairy butter at the Ohio State Dairy Association held February 12th to 14th, 1908, at Columbus, and we wish to thank you heartily for same as it is far beyond our most sanguine expectations.

It shows the highest degree of dairy type, and should there be a show for dairy cattle I would be confident of carrying off high honors. Thanking you again we close, hoping to meet you some future time.

MR. AND MRS. O. T. AYDELOTTE,
Campbellstown, Preble Co., Ohio.

Tacoma, O., March 28, 1908.

Prof. E. S. Guthrie, Secretary Ohio Dairymen's Association, Columbus, O.

My Dear Sir: The heifer calf given by Mr. D. H. Olds of Springfield, O., for the best market cream exhibited at the late Diarymen's Association arrived at my farm some days ago in good shape. The calf in form is all that any one could ask. Breeding choice. The dam, one of the toppers at Mr. Olds' late sale, as an individual, I considered was one of the best cows in his herd.

I wish to thank Mr. Olds, through you, for selecting and donating to the Ohio Dairymen's Association such an excellent calf. I wish also to thank him for the comfortable and light crate, care in shipping, etc. I shall retain the calf in my breeding herd. Very truly yours,

L. P. BAILEY.

OHIO DEPARTMENT OF AGRICULTURE

Division of Horticulture

BULLETIN NUMBER THREE

AND

SECOND ANNUAL REPORT OF CHIEF OF THE DIVISION

1907-8

Prof. W. J. Green addressing the society in the orchard of H. J. Schmitkons, North Amherst.

OHIO DEPARTMENT OF AGRICULTURE,
DIVISION OF HORTICULTURE.

COLUMBUS, OHIO, FEBRUARY 20, 1908.

HON. T. L. CALVERT, *Secretary of Ohio State Board of Agriculture:*

In presenting my second annual report I can claim enough progress along the route mapped out to convince me more firmly than ever of the great need of this division, and its unlimited possibilities in adding to the sum total of health, happiness and wealth in our State.

Respectfully submitted,
W. W. FARNSWORTH,
Chief of Division of Horticulture.

Field meeting at North Amherst, October 3rd, 1908.

STATE FAIR MEETING

The State Fair meeting of the Society was held at Townshend Hall at 7 p. m., September 4th.

President U. T. Cox called the meeting to order, and appointed the following committee on New Fruits on Exhibition, viz.: M. I. Shively, C. W. Montgomery, S. R. Moore.

Prof. W. R. Lazenby then gave an interesting address on his "Impressions of California Horticulture," including a visit to Luther Burbank.

Mr. William Miller and Secretary Farnsworth made a few remarks concerning the aims and methods of the Division of Horticulture.

Mr. L. H. Coddard of the Experiment Station, said they would like to have a committee appointed by our society to advise with the staff of the Station concerning the horticultural work there.

The Secretary moved that the Chairman appoint such committee, and that the President of this Society be its Chairman.

The motion prevailed and President Cox named Wm. Miller, E. J. Riggs and W. W. Farnsworth as such committee.

The question of holding a field meeting of the Society in the orchards of Mr. H. S. Schmitkons at North Amherst was discussed.

On motion of Mr. F. Hutchinson, it was decided to hold such a meeting on Thursday, October 3d. The Committee on New Fruits then presented the following report:

REPORT OF COMMITTEE ON NEW FRUITS.

The apple exhibited by Mr. E. G. Cox is the Kaighn Spitzenberg in our opinion.

The small winter apple shown by Lewis Hunt, is too small in size and too hard to determine quality, inferior to Winesap.

The summer apple exhibited by Mr. Hunt is attractive in appearance and of good quality.

The apple itself is to be commended.

The summer apple placed on the table by Mr. Schott is a small apple of very good quality, but commercially would not compare favorably with other varieties of its season.

No. 38 has much of the flavor and characteristics of the Maiden's Blush, and if a distinct variety would have to compete with it, and other standard sorts of the same season.

The specimen shown by U. T. Cox is of better quality than Duchess, but no better than Wealthy, and unless there is something especially meritorious about the tree there would seem to be no place for it in the present list.

(Signed) M. I. Shively,
Cary W. Montgomery.

Prof. Selby asked that those who had sustained damage to young trees by the storm of October, 1906, report particulars to him.

The Chair appointed the following Committee on Memorials, viz: S. R. Moore, Prof. W. R. Lazenby, F. Hutchinson.

Mr. Miller suggested that a committee be appointed to revise the premium list for the Fair, and on motion of Prof. Selby the President appointed the Secretary and M. I. Shively, R. A. Gill and F. R. Ballou.

FIELD MEETING
THURSDAY, OCTOBER THIRD
AT THE ORCHARD OF H. W. SCHMITKONS,
NORTH AMHERST, OHIO

THE world of today is asking for men and theories that "make good" and those which do not soon lose their prestige. The Horticultural Press, the Experiment Station and the State Horticultural Society have for years been urging orchardists to spray and we now invite you to attend a field meeting at the orchard of Mr. H. W. Schmitkons, at North Amherst, Ohio, and examine for yourself the results of the spraying done there this season by Mr. Schmitkons in co-operation with the Ohio Experiment Station.

COME AND MEET WITH US AND HEAR APPLE CULTURE DISCUSSED, AND SEE THE OBJECT LESSONS AFFORDED BY THIS ORCHARD

A large tent has been secured in which to hold the meeting in case the day should be stormy.

PROGRAM

TEN A. M.

Cultivation and cover crops	W. W. Farnsworth
Pruning the orchard	F. H. Ballou
Feeding the orchard	W. J. Green

ONE P. M.

Address	Hon. R. B. Lersch
Spraying address and demonstration	H. A. Gossard and A. D. Selby
Harvesting, packing, storing and marketing the apple	U. T. Cox

An opportunity will be given for questions and discussions.

U. T. Cox, President Ohio State Horticultural Society.
W. W. Farnsworth, Sec'y Ohio State Horticultural Society and
Chief of Horticultural Division, State Board of Agriculture.

CULTIVATION AND COVER CROPS.

The main objects of cultivation in the orchard are to make plant food more readily available, and to conserve moisture by keeping a dust mulch which prevents evaporation, thus increasing growth by affording a more plentiful and continuous supply of food and drink.

The purposes of cover crops are several.

1st. To check too rapid growth and cause the tree to ripen its wood and buds properly, so as to withstand the hardships of winter.

2nd. To protect the roots of the trees from the effects of deep freezing of the ground during the winter by reason of the protection afforded by the cover crop itself, and the snow and leaves which it holds in place.

3rd. To add humus to the soil and to replace that which is made available by cultivation and eaten up by the tree in its growth.

Fruit growers all realize the advantage of growing the trees rapidly, in order that they may become large enough to produce large yields in the fewest possible years from time of planting.

To accomplish this, many of them cultivate the trees, usually growing hoed crops of some kind among them for the first few years.

These, as a rule, usually serve at least one of the purposes of the cover crop, in that they tend to check the growth of the tree later in the season.

The tree should make the most of its growth in the fore part of the season, and this the cultivation aids.

These crops, as a rule, however, do not add humus to the soil, so if they are long continued, humus in some form should be drawn in from outside, in the form of stable manure or straw to mulch the strawberries or in some similar manner.

After the first few years, the ground should be given over entirely to the trees and, in fact, I believe that in cases where it is difficult to obtain manure or humus, aside from that grown in the orchard, it will be better to devote the ground from the very first to growing the trees, and also to growing along with them crops of humus, which will decay on or in the soil and be stored up for the use of the trees when later they begin bearing, and especially after the trees have so fully occupied the soil that no humus can be grown.

This is one of the advantages justly claimed by those who practice true sod mulch culture; by growing no other crops in the orchard from the beginning the amount of humus in the soil may be greatly increased.

I have usually grown potatoes, cabbage, squashes, strawberries, currants or similar crops the first few years and then when the trees begin to occupy a considerable portion of the ground, I discontinue cropping.

The soil, having been well manured, is in good condition, and if the trees are large enough to bear and seem to be growing too vigorously to produce fruit buds, I sometimes seed to clover for a year or two to produce check enough to start bearing.

The ground is then plowed shallow and cultivated until about midsummer.

Plow as early in the spring as the ground is in good working condition, in order to preserve moisture.

Just how late the orchard should be cultivated before sowing a cover crop will depend upon the kind of fruit, the condition of orchard and the size of the crop of fruit.

An orchard bearing a heavy crop, or one which seems feeble may be tilled later than one which is growing vigorously or carrying but little fruit.

Where the ground is not too much occupied by the trees, a very satisfactory plan is to work the ground with plow or with disk or cutaway harrow, and follow occasionally with spring tooth or smoothing harrow until about June 1st.

Then drill in cow peas or soy beans in rows about 24 to 28 inches apart, which will allow of a couple cultivations which will keep the orchard cultivated until in July, and also give the cover crop a fine start.

The crop will then take care of itself and add a large amount of humus and fertility to the soil.

Where the orchard is fenced, it may be found profitable to allow hogs to harvest the beans or peas, but watch them, as I am not in favor of allowing stock in an orchard, except horses or mules and only then when at work.

I sometimes go through the orchard or berry field which has beans or peas growing in it and sow turnips the latter part of July.

The first hard frost will kill the beans and the turnips will then "possess the land" and form a cover crop for fall and winter.

The cow horn turnip is said to be best for this purpose, on account of the subsoiling effect which its deep growth has on the soil.

The claim is made that the growing of turnips makes potash available. Whether there is any truth in this, I am unable to say, but I feel sure that the benefits from growing a crop of turnips in places where nothing else would be grown, more than repay the expense.

In the case of the peach orchard which is carrying a heavy load of fruit and requires cultivation later, oats or barley are among the most suitable crops to sow, say the first of August.

If it were not for the ravages of the green aphis, the Canada field peas would be much better, as they withstand hard freezing and would grow late in the fall and also add much more fertility.

Crimson clover is very popular for this purpose further south, but does not seem to gain much favor in Ohio, on account, mainly, of its tendency to winter-killing.

Sand veitch (Vicia Villosa) is one of the best cover crops I have ever grown, although it sometimes fails to make much growth in the fall.

Its advantage over red clover is that it accomplishes the bulk of its growth about two or three weeks earlier in the spring, which is a very important advantage.

In fact, the ideal cover crop should make all of its growth in fall and early winter and preserve as great a bulk as possible on the ground over winter and be dead in the spring, so that it may rob the orchard of no moisture in the spring.

Such a leguminous crop hardly exists at present or, at least, we do not know of any, but I think the veitch is, in most cases, the nearest approach to it with which I am acquainted.

In the case of apple orchards, I have secured excellent results very cheaply, by allowing the veitch to mature seed and then on a hot afternoon in late July, when the vines were thoroughly ripe and dry and brittle, run over it with disk or cutaway harrow, lapping half.

This chops up the vines and works up the soil and a fine volunteer crop will soon spring up.

Even peach trees which stood in one corner of the apple orchard showed great thrift and vigor under this treatment.

In orchards near the buildings where much poultry is kept, sow buckwheat and allow the chickens to eat it, and then eat the chickens.

By this method, the orchard, the chickens and the owner will be benefitted at a slight expense.

In short, whenever you can grow a cover crop of any kind in an orchard, without injuring the trees or fruit, by all means do so.

Rye has often been recommended and, while better than bare ground, I consider it one of the poorest.

It is not a leguminous crop and adds but little fertility or humus to the soil, and does not afford a very heavy cover during the winter.

If plowed early in the spring, it does not add much to the soil and, if left to grow long, it robs the trees of too much moisture; yet I would sow it if I had nothing better.

Should a crop of veitch or clover be growing in the orchard, and the crop of that year fail from any cause, I would seize the opportunity and allow the crop to grow all season and plow early the next spring.

An abundant supply of humus is absolutely necessary to secure ideal conditions for growth of tree and fruit and the more thorough the tillage, the greater the care necessary to replenish the store of humus.

Great improvement has been made in the past few years in implements for tilling the orchard.

The ones I use mostly are the common turning plow, with wheel to prevent running too deep, the gang plow which turns two or three furrows ten or eleven inches wide and three or four inches deep, and does very satisfactory work, where there is not too much trash on the ground, but is not of much account in turning under a heavy cover crop. The expanding reversible cutaway harrow is probably used by us nearly as much as all of the others combined.

We follow it by the smoothing or spring tooth harrow, with a long draw bar, which spreads the sections, leaving a blank in the middle which is worked later.

By this means, the harrow runs up under the low headed trees, while the team is out in the middle of the space.

The same principle applies to the cutaway.

To recapitulate:

Begin cultivation as early in the spring as ground is in condition to work well, if no cover crops are growing thereon.

Do not plow or harrow deep enough to destroy roots.

Preserve the earth mulch until about mid-summer, the exact date depending on conditions before mentioned.

Improve every possible opportunity to grow humus when it can be done without injury to trees or crops.

Use leguminous crops as far as possible.

Be careful about allowing cover crops to grow too late in spring to rob trees of moisture.

THE PRUNING OF FRUIT TREES.

F. H. BALLOU.

There can be no definite line of treatment—no ironclad rules of instruction laid down, relative to the pruning of a young tree at the time of planting or during the early years of its growth and development. *Nature has no duplications*—no two living things either in the animal or vegetable world are exactly alike. Each and every tree possesses an individuality, just as does the child or adult of the human family, and must be dealt with as an individual.

However, we determine on a general plan of procedure and reserve definite action in *shaping* our ideal until the individual is taken in hand.

The destructive elements or forces which are at work in our present day—San Jose scale, the coddling moth, the various blights and other insect and fungous enemies of the orchardist—are bringing to bear a powerful influence in the *modification of our ideals* and practices so far as the forms of our orchard trees are concerned. Directly opposed to the old plan of setting tall-stemmed or high headed trees, whose fruits were designed to be produced in mid-air, while cultivation in production of farm and forage crops should be pursued without hindrance beneath their branches, we are now pretty generally falling into line in the belief that *the tree is worthy of the space it covers;* that the nearer the ground we produce our fruits, the more cheaply can they be grown and the more perfect and excellent will be the quality of the product. The labor of pruning, spraying, thinning and gathering of the fruits is reduced to the minimum, while the pleasure and satisfaction in accomplishing these positively essential duties and privileges of the successful orchardist are experienced in the greatest possible degree.

While it is desirable to prune the little trees back at time of planting, in such a manner as to reduce their tops in due proportion to the loss of their roots in digging and transportation; that the pruning at that time should also be with a view to favoring well-balanced heads in which the branches are uniformly sent forth at different points from a single, central stem; and while such restriction should be exercised in the cutting back of annual growths of the shoots as to induce the early formation of *low, spreading, symmetrical heads,* I at the same time believe and am confident that young trees *can* be and *are* many times over-pruned during the first years in the orchard, resulting in abnormal, annual growths of wood at the expense of the formation of fruit-buds, and of early bearing. Participants such as we are, and must continue to be, in necessarily determined and persistent combat with an ever-increasing host of insects and the more serious forms of fungous diseases, we *must force our trees into fruit-bearing* as promptly as can be consistently done and keep them down where orchard pests may be dealt *over-handed, downward blows which mean subjection.* We must, in a measure, break away from *at least one old idea* of former generations—no matter how loth we may be to do so—that in planting a tree or an orchard, we are planting for posterity. We have no assurance that posterity will elect to wage the warfare necessary to perpetuate the orchard developed by our years of vigilance and persistent labor and turned over from our hand as a clean, healthy, vigorous, fruitful heritage. Rather should we plan and plant and prune and spray for quick returns, even at the risk of shortening the life of the tree, trusting that our qualities of determination, pluck and pugnacity in combating orchard enemies will be transmitted as a more excellent heritage to coming generations.

In a paper of this kind it would be useless to attempt to enter further into details as to the pruning of young orchard trees from the time of planting until the fruit bearing age be attained. The proper course to pursue with one particular tree would necessarily have to be modified ninety-nine times in dealing with one hundred of its orchard companions. Therefore, the best we can do is to generalize—or summarize—as follows:

(1). Cut back the young tree at the time of planting to balance the loss of roots in digging, and remove all mutilated parts of the roots themselves. This is to induce the formation of a shapely, well-balanced head, and to free the root system of those parts which would be a detriment to healing and callousing and the sending out of fibrous rootlets.

(2). If the tree be divided or "forked," cut away entirely the lesser or weaker division—thus providing for a single stem or body.

(3). Cut back annually those shoots which so lead in growth of wood as to eventually throw the tree out of balance.

(4). If the tree makes a very vigorous growth of new wood in all of its parts, restrict such growths by cutting back sufficiently to prevent its becoming "top-lofty"—keeping in mind that such cutting, with a view to broaden out its head, will also result in a multiplication of new shoots the succeeding season, and that this new growth will need thinning and restriction to prevent the formation of a "brush-broom" head.

(5). Annually remove all branches and shoots which grow toward the center of the tree and those which cross or interfere with each other.

(6). Bear in mind that the winter season, when the wood is dormant and the temperature comparatively low, is by far the safer season to do pruning. At this time, the germs of the deadly blight or canker are also inactive, and even if carried from branch to branch on saw or pruners, the conditions are not favorable to inoculation and no harm is likely to result.

(7). Cut out at the annual winter pruning all dead and diseased branches, painting over all wounds thus made with lead and oil.

(8). Carefully examine the larger branches and the bodies of all apple trees, young and old; if discolored, dead and sunken areas are found, bear in mind that such are most likely cankers. Pare away with a sharp knife all of the diseased bark downward and outward to the healthy wood and cover the wounds thus left with a heavy lead and oil paint.

(9). Do as little pruning as possible during the summer season—for cutting at this time can be safely done only when accompanied by immediate sterilization and painting of the wounds.

(10. Prune for a symmetrical, low-down tree and an open head—one in which the sprayer, the air and the sunshine may each do its important part in the development of perfect, well-colored, high quality fruit. But even with all this forethought, promptness and thorougness in the care of the orchard in its earlier years, the time will all too speedily come when, to facilitate handling at the greatest profit, restriction of the height of the trees must be resorted to. In view of the fact that there are thousands of young and old bearing orchards in our state which have reached or are approaching this stage, the subject of *pruning for renewal* has become one of vast importance—of almost universal interest to our people.

The object of *renewal-pruning* is three fold:

(1). To lower our orchard trees to a level where spraying may be done easily and most effectively—with the least possible expenditure of time, labor and materials.

(2). To force into fruit-bearing the lower hemisperes of our orchard trees, which, through their tall, unrestricted, upright growths, the consequent shading of each other and the natural impulse of fruit production at the higher extremities, have so taken the precedence of the lower hemispheres as to render them practically sterile.

(3). To secure at a lower elevation a *new growth of wood* which may, by restriction and thinning, eventually be brought into fruit-bearing.

As the application of the plan of renewal in both comparatively young and old orchard trees is substantially the same, I shall, for the sake of brevity, confine these remarks more especially to the old orchard.

The type of trees with which renewal may be successfully practiced is found in those which were originally headed moderately low and which yet retain, in fair vigor, their lower branches. The type in which renewal is not practicable are those trees whose heads were formed high above ground, and in which tall, naked, main branches extend outward and upward to an extreme height.

Renewal consists in cutting back from one-fourth to one-half their height the taller, more upright, main branches of a tree. The most desirable point at which to saw away such branches is just above a diverging branch of moderate size, as recovery from the shock of cutting will be more prompt, healing of the wounds more rapid, the resultant growth of new shoots better distributed and danger from disease much less by removing this abnormal growth of young shoots, through which the deadly twig blight is so commonly admitted, to a position more remote from the main branch itself. However, if there should be no diverging branch at the proper height at which the larger branch should be cut away, one should not hesitate to cut it at the desired point, with the resolution to combat disease, should it gain a foothold, to the best of one's ability.

The season of late winter—as with regular pruning—is the one to be preferred for renewal-pruning. The wounds may at once be dressed with a heavy lead and oil paint. If the work be deferred until spring, when the sap is flowing, conditions are not so propitious to successful work. There is danger of loosening or stripping the bark from the branches at the point where they are severed, and of bruising the larger branches or the body of the tree below, by the heavy severed branches falling upon or against them when dropping to the ground. Should the work of necessity be deferred until warm weather in the spring—which I do not recommend—the wounds should at once be sterilized with a weak solution of copper sulphate (blue vitriol), 1 ounce to 2 gallons of water, applied with a brush. After the wound is perfectly dry, the usual application of a heavy lead and oil paint should be made.

This plan, briefly outlined, will work wonders in the rejuvenation of old trees if they be in fair vigor at the outset and comparatively sound in body and roots. and when accompanied by generous fertilization, with barnyard manure and shallow plowing and cultivation, or by mulching with straw or similiar material. And, while it should not be our purpose to make the old orchard permanently take the place of a younger one, we may reasonably expect that old trees, so treated, will amply supply the home with fine apples while the new orchard is growing, and even pay a profit from the surplus which may be placed upon the market.

Bulletin No. 180, of our Experiment Station, describes and illustrates in detail the plan of making the old orchard fruitful and profitable, and will be sent free to all who apply for it.

FEEDING THE ORCHARD.

The feeding of trees is at once more simple and yet more complex than the feeding of animals. If both physical and chemical conditions of the soil are favorable to plant growth, it is as simple a matter to furnish food to plants as it is to turn animals into pasture where there is plenty of grass and water.

When the pasture fails, one is not at a loss to determine what an animal needs in order to keep up the supply of nourishment. In the case of plants, however, one may not even be aware of a shortage of food, but when that fact becomes forced upon his attention there yet remains the hardest part of the problem in determining what and how much to give, in order to secure the best results the most economically.

If one had to throw food over a wall so high that he could not see the animals which he was feeding and had no way of telling whether it was consumed or not, he would be in much the same dilemma as one who strews fertilizers about the roots of trees.

The comparison does not hold in all respects, but it illustrates the difficulties one encounters in feeding plants. Other difficulties in plant feeding might be mentioned and it would be possible to make it appear that we really know next to nothing about the matter.

We know some things that are helpful in plant feeding, but I fear that many of us have made the mistake, and are ready to make it again, of trying to make a few facts cover too much territory. We are inclined to generalize too much and we are apt to forget the oft-repeated injunction not to be too certain that results secured in one place are to be relied upon for other localities.

Then, too, we have been led to judge as to the needs of fruits by chemical analyses. Fruit trees need plenty of potash and but little nitrogen, we are told, and I am not able to deny the statement.

I remember, however, that we have been told again and again for half a century that potatoes need a fertilizer high in potash, as shown by analysis of the tubers. No one ever ventured the advice to give potatoes phosphoric acid, and yet numerous experiments made at the Ohio Station show that phosphoric acid is the ruling ingredient in a potato fertilizer upon almost all Ohio soils.

Potatoes need potash, but nearly all Ohio soils contain an abundance of this element and are lacking in phosphoric acid. Perhaps the same thing may be true regarding fruit trees, but there is not enough known concerning the matter to make even a close guess possible.

What I have said thus far has been for the purpose of cautioning against too hasty and sweeping generalizations and also to show the necessity of individual effort in studying the question.

The only thing further that can be done at present is to point out some method of going about it to question the soil regarding the needs of fruit trees.

Each orchardist must need do more or less questioning of this kind himself. It might be a fatal mistake to rely too implicitly upon the observations or opinions of others in this matter.

Nearly all Ohio soils contain sufficient plant food ingredients to sustain a good growth in young fruit trees before the time of fruiting. Indeed, in the majority of cases, the addition of much plant food would be injurious, causing too much growth and retarding fruitage. It is safe to say that in the few exceptions which occur, mulching, or leguminous cover crops, or small quantities of a complete fertilizer will prove sufficient. Lack of vigor in newly planted trees can usually be traced to other causes than that of insufficient plant food.

After fruit trees have attained the bearing age they make heavy annual drafts upon the soil. There is no rotation of orchard trees, as in the case of grains, and when it is remembered that an apple orchard in full bearnig takes more plant food from the soil each year than does an ordinary crop of wheat, the wonder is how the orchard continues to live and bear fruit. Of course, apple trees are better foragers than wheat plants, but the reason why blood cannot be squeezed out a turnip is because no blood is there and an apple tree is subjected to the same kind of limitations.

It thus appears that feeding fruit trees is an urgent matter after they have attained full bearing age.

If an orchard has been grown after the mulch method and some mulch applied each year while the grass is cut, and allowed to decay on the ground, there does not appear, in practice, to be much necessity to supply fertilizers, but even in this case there ought to come a time, theoretically, when the plant food begins to lessen to a harmful extent. This matter has not, however. been put to a satisfactory test. Likewise, if a wise selection of cover crops are grown the time seems to be quite remote when the trees will suffer for food.

In the ordinary management of orchards, the restoration of vegetable fibre is far too meager to serve for a very long time.

Trees suffering for want of nitrogen show it in yellowish foliage and scant growth, while if too much of that element is present, the growth is too succulent and lacks hardiness, the fruit is light in color and ripens slowly.

These symptoms enable us to regulate the nitrogen supply fairly well. In the case of a mulched tree, the nitrogen supply is probably increased beyond the present needs of the trees and yet no harm occurs.

There appears to be a discrepancy or contradiction here, not easily explained. It may be that the nitrogen under the mulch is not quickly available and if so, it is in line with good practice, which is in fertilizing orchards to use tankage, wool or leather waste or bone meal, for nitrogen rather than nitrate of soda, which is quickly available and wastes rapidly.

Inasmuch as fruit trees do not need, in fact, ought not to be greatly stimulated with nitrogenous fertilizers, it may seem hardly worth while to give much attention to feeding them with nitrogen.

It is well, however, to give special attention to this element, because it is essential and at the same time the most expensive. If we buy it we must pay well for it, but for most soils there is little need of buying it in any but small quantities.

If our leguminous cover crops and our mulch fail to give enough nitrogen to keep the trees in a good growing condition, then it is probable that a fertilizer containing 2 per cent nitrogen is rich enough in that element. It would hardly be advisable to use nitrate of soda on fruit trees, except experimentally. Suppose that one desires to know if his fruit trees need nitrogen, then he might use 300 or 400 pounds of a mixed fertilizer per acre, containing 50 pounds of nitrate of soda or 80 pounds of dried blood, but if it is found that nitrogen is needed, a better fertilizer would be about 100 pounds each of ground bone, acid phosphate and muriate of potash.

In many cases, it might pay to double these quantities and there is not much danger of loss because of insolubility. It is important, however, to study the nitrogen needs of the trees by using small quantities of a quickly available nitrogen compound, and when this is determined, to continue later with a less soluble mixture.

It is hardly a good plan to use nitrogen alone, but rather in varying quantities in connection with other plant food elements.

It must not be supposed, however, that one is going to get the answer to his question that will stand good for all time. One must constantly be asking questions of his trees and soil.

There are indications that the lime question, with regard to our fruit trees, needs to be studied also. In some parts of the state, lime is of the utmost importance in growing leguminous crops, and upon these we must depend largely for the nitrogen supply.

Lime often exerts great influence on fruit trees, especially the stone fruits, particularly in the matter of ripening of both wood and fruit. On clay soils, outside of the limestone region, it would be well worth while for orchardists to try a ton of ground limestone per acre.

Phosphoric acid and potash are more to be regarded than other plant food elements in the feeding of fruit trees. Potash is considered to be the ruling ingredient, but it is usually comparatively abundant in clay soils, while there appears to be a lack of phosphorus in most Ohio soils.

It is generally thought to be well to supply about 12 per cent. of potash and 8 per cent. of phosphoric acid in fertilizers for the fruits, but owing to the fact above stated, it is probable that the proportions might be considerably changed, using more phospohric acid. It is not known whether muriate sulfate is more desirable, but probably the former will do as well as any, and possibly kainit will answer also.

If iron plays as important a part as commonly supposed in the coloration of fruits, then slag phosphate ought to be the form of phospahte to use, but as bone contains some nitrogen and phosphoric acid as well, it makes with potash all that we need. Three hundred and fifty pounds of ground bone and 200 pounds of muriate of potash per acre is a good dressing for a bearing orchard.

To attempt, however, to state quantities of fertilizers needed is more than any one can reasonably do. The only way, as in the case of findng out what particular ingredients are needed, is to try.

My first observation of the good effect of fertilizers on an orchard was where some barnyard manure and about 50 bushels of wood ashes per acre were applied each year. In this orchard the most apparent result was annual crops of fruit of good quality.

Since studying the effect of mulching, I am struck with the similarity of results by the methods.

I would not hesitate, on most soils, to use at least half a dozen loads of strawy manure per acre on a bearing orchard, supplementing with 100 pounds muriate of potash and as much acid phosphate.

Indeed, I would prefer to use some manure rather than all commercial fertilizers, for the manure produces a mechanical effect not to be secured with chemicals alone.

In feeding fruit trees, one must do as he would with animals, put the food within reach.

The feeding roots of a tree are mostly farther away from the body of the tree than the branches extend, hence the fertilizers need to be well scattered over the ground between the trees. This holds true even of trees five or six years old.

Top dressing is the only practicable way in an orchard in grass, but where cultivation is practiced, the fertilizers should be worked into the soil.

The spring of the year is the time to apply fertilizers, but it is not likely that there is much waste in insoluble kinds, if distributed at any time. One cannot safely disassociate the fertilizer question on orchards from a number of other operations. There is no use in fertilizing trees and neglecting to do some other things. Not to mention all that needs to be done in an orchard, it is well to emphasize the importance of securing a good physical soil condition so that the best results may be secured from the use of fertilizer. There must be good drainage and a sufficient supply of vegetable fibre before fertilizers can do much good. To go back still farther, there must be a right selection of soil upon which to use fertilizers before we can feed an orchard successfully.

THE NATURE OF FUNGICIDES AND THEIR USE IN ORCHARD SPRAYING.

BY A. D. SELBY, BOTANIST OHIO EXPERIMENT STATION.

We apply the name fungicide to any preparations employed upon orchard trees for the prevention of fungous diseases. You are all quite familiar with orchard practice in this respect and will doubtless tell of achievements that were profitable, wherein extensive use was made of fungicides upon the apple to prevent apple scab, bitter-rot, black-rot, etc.; likewise with the spraying of peach trees to prevent leaf curl and scab; of plums and cherries, to prevent leaf-spot or shot-hole fungus, as well as to help check the rot. In this region, especially, you are familiar with the use of the self-same fungicide to control black-rot of the grape. I do not need to assert how essential these spraying operations often prove in saving the crop of the orchardist and vineyardist.

NATURE OF FUNGI AND OF FUNGICIDES.

The names fungicide and germicide are more or less interchangeable, although fungicide is the more limited in its application. By a fungicide, we mean an agent that will destroy the living and growing, as well as the resting forms of fungi, and more especially of the parasitic fungi, which grow upon orchard trees; the result of the attack in such cases being either a loss of crop or a reduced value of the crop, because of the injury from the fungus. It is not unusual that both reduced yield and inferior quality may result from the attacks of the fungus. These parasitic fungi grow from minute spores, which serve the same purpose as seeds among higher plants; the growing or vegetative forms of these parasites branch and branch again and in turn bear fruit bodies, including the spores. However, the spores and threads of these parasites are so very small that we must employ the microscope in their determination. While this is true, one can readily see the masses of the various fungi where they grow upon the leaves or fruit, as in the case of the apple scab.

We must, moreover, remember that these minute spores are easily carried by the currents of air, like any other fine dust, and may be deposited upon any exposed surface. While every particular disease calls for a special study, also the parasite causing it, and its forms of reproduction or multiplication as well, with few exceptions, certain general facts are common to all diseases upon orchard trees or upon grapes. We have to deal not only with attacks at a particular time, but also with a series of attacks by the parasite. One exception we may name is the leaf curl of the peach, which may be controlled by a single application of the remedy at the proper time; namely, previous to blossoming in the spring; while the single application may, in these exceptional cases, like leaf-curl, be enough, with the apple scab, the leaf-spot disease of plum and cherry, with black-rot of the grape and with many others *we have a recurrence of infection by the fungus.* By this we mean that the spores which are continuously being produced are carried and just as continuously deposited upon the exposed surfaces. I believe I do not need to dwell upon this feature. You can all think of so many illustrations. Suppose upon the cherry or plum you omit to spray for a long interval and then make one or two applications later in the fall. You will have tufts of leaves toward the tips of the branches containing good growth and plenty of good leaves, also lower down on these branches, where the earlier spraying successfully protected the leaves; between these leafy portions there is left a leafless branch. Why? Because in the interval of omitted spraying, these unprotected leaves became so attacked by the parasite, that later spraying, although done well, would not save them. We can see then, that, in general, these are the exceptions which here, as elsewhere, have proved the general rule. We can see, I repeat, what particular demands we must make of a remedy, of a fungicide, for orchard application.

First: A fungicide must be a germicide, that is, it must destroy the parasitic growth or the parasitic plant in the form in which it occurs upon the trees.

Second: This fungicide must not kill or injure the growing shoots, leaves or fruit of the tree or vine.

Third: The fungicide for such general use *must be but slowly soluble;* by this is meant the remedy must remain upon the parts of the tree in condition to destroy newly deposited spores or new growth of the parasite. *It is this necessity for warding off continuous attacks by the parasite that really marks* *the essential features of a successful remedy in actual practice.* You will say no man, in his right mind, will be willing to apply a germicide which will injure his fruit trees, nor to apply a germicide that would not destroy the parasite. There are most excellent fungicides and most excellent germicides which would be washed off by the first shower, or which would evaporate after a brief period and are not usable for the reason stated above.

A practical fungicide must have a *fourth* quality, that of being readily made to cover all exposed surfaces subject to infection by the parasite. I believe all plant pathologists, as well as all practical orchardists, look upon Bordeaux mixture with greater and greater appreciation as the years pass. In this we have not blue vitriol and not lime, *but actually a product of the combination of lime with the copper in the blue vitriol, which the chemist calls copper hydroxid;* this copper hydroxid is finely divided and may be kept suspended in the spray while it is formed, and at the same time, in the presence of an excess of the lime. The niceties proposed ten years ago, by which we were to use litmus paper and never permit an excess of lime, proved dangerous because of lime deficiency. This lime excss is an essntial insurance against too great solubility of the copper hydroxid, the real fungicide. Also the entomologist will possibly say that the excess of lime is a partial insurance against injury from soluble arsenites used as insecticides in the spraying for insects.

I cannot repeat too often that it is this slow solubility and the finely divided condition of the copper hydroxid in Bordeaux mixture in the presence of the excess of lime, *which insure both the persistence and the effectiveness of Bordeaux mixture as a fungicide.* The liquid Bordeaux spray, containing the recently formed finely divided copper hydroxid, has advantages both in uniformity and in slow solubility which a liquid spray, made by stirring into water the dried and powdered Bordeaux, may or may not possess. While the powdered Bordeaux is made to contain the essential copper hydroxid, certain water relations may be changed in the drying. I may add, further, that it seems entirely possible to suspend a smaller amount of newly formed copper hydroxid in the presence of some diluting or admixing agent, which will serve both the purpose of a diluent and a sticker, so that the spray actually applied may be cheapened without actual impairment of its efficiency. Favorable results from such additions are already indicated in grape spraying.

The high cost of copper sulfate during the season of 1907, has brought many inquiries as to the possibilities of reducing the amount of copper compound actually required, and thereby reducing the cost of the spray. If this be found practicable, I believe it will be from the use of a dilution sticker, so to speak, in which the smaller amount of the copper is evenly distributed and held available for its true purpose. Certain other compounds are excellent fungicides, but may be applied only when the tree is dormant. Of this class, are the calcium and sulfur compounds, the various lime sulfids, produced by heating lime and sulfur together, as in making the lime-sulfur spray, which has proved so effective against scale insects; where scale insects are to be contended against, this insecticide spray being at the same time a good fungicide, may take the place of the other fungicides in the prevention of the leaf-curl of the peach, as well as the very early spraying to disinfect plum orchards or cherry orchards wherein rot has been very troublesome. It may be proper to add also that Bordeaux mixture has proved useful by reason of its adaptation to use as a carrier of arsenical compounds to serve as insecticides. Bordeaux mixture shows an observable stimulation of the plant processes, which we call photosynthesis; while these are difficult to determine exactly, this stimulation is known to exist and evidently exerts favorable influences on the plant.

TIME TO APPLY SPRAY REMEDIES.

Careful study of these orchard and vineyard parasites under the microscope has shown that the activity of the parasite at its beginning of growth and attack in the spring is so timed as to agree with the beginning of growth and development in the orchard trees or grape vines. It is this mutual relation between the development of the fungus and the growth of the tree which calls for applications to be made at particular times, such as that for the apple scab, which is required to be made upon the new shoots "just before they are in bloom." I repeat, the spraying made at that time is more effective because the fungus is in a more active condition at that time and more susceptible to the fungicide; the ease of destruction is therefore even greater than at a later time. There is also another reason; we may not properly spray trees in bloom because our friends the bees may be killed by the spray, and the period from the beginning of bloom to the dropping of the flowers is not only somewhat prolonged, but also a period during which the weather conditions are often extremely favorable to the growth of the apple scab fungus. In the omission of the spray for apple scab, which is recommended to be made as the buds are swelling, we find a diversity of results, varying with the season as well as with the previous history of the orchard. The orchard which has been sprayed continuously for a period of years will offer different conditions from the apple orchard which has been sprayed but a short time or sprayed imperfectly. What we may call the cumulative effects of the spraying are greatly in favor of the continuous spraying. On the other hand, with cherries, our applications must be made in such a way that the fruit will not be too much spotted by the spray; the same applies in the later spraying of grapes. I have so frequently been asked why we recommend the use of ammoniacal copper carbonate in the late sprays for grape rot instead of using Bordeaux mixture. We believe this spray to be less effective than Bordeaux mixture, but we must use some more soluble spray as the period of ripening approaches. The ammoniacal copper carbonate will therefore more easily disappear from the clusters than will Bordeaux mixture, if applied so near the time of ripening.

The recommendations of the spray calendar as to time to spray or when to spray orchard trees, are based upon a study of the mutual relations of the parasite and the tree, and upon their periods of development. It is a well established principle that the growing forms of the fungus parasite will be more easily killed than the resting forms which develop upon them a protecting coating or covering. As the time for the critical apple orchard spray comes just at corn planting time, this application is all the more essential, corn field or no corn field, because it comes at a time when the most good will be accomplished by spraying.

THE STRENGTH OF BORDEAUX MIXTURE.

The strength of Bordeaux mixture recommended by the early writers was much greater than that used in our day; doubtless there are many reasons for this fact. The strength of Bordeaux mixture recommended by the Ohio Experiment Station was early determined by Prof. Green, the station horticulturist; namely, the 4-4-50 formula; by this we mean four pounds copper sulfate and four pounds lime, to fifty gallons of spray. A stronger solution, the 6-6-50 formula, was for many years used in New York and by the Eastern stations. Most of you will recall that within the past year both the New York experiment stations have abandoned the old contention for a strong mixture on apple trees and even, though after many years, have joined the Ohio procession, and have even "gone one better;" they now recommend three pounds of blue vitriol with a reduced amount of lime to fifty gallons of mixture. To the writer it appears that the quantity of mixture applied to a given tree surface will be one of the factors in the problem of strength of mixture; where, as in the old hand pump system, one might use five gallons of spray to a very large tree, with high pressure air or power pump, the orchardist might today use one-half more upon a tree of the same size. He would therefore, with the same strength of Bordeaux mixture as we now use, drench the tree with even a greater amount of the actual copper compound that does the work in the spray. As stated and repeated before, the writer looks upon the peculiar chemical and physical character of the copper hydroxid produced in the liquid process of making Bordeaux mixture, as a very valuable and probably an essential feature of the fungicide. These will not be lost in dilutions; they may or may not be lost in dust sprays and in the use of powdered Bordeaux that has been dried, if afterward stirred into a liquid spray. *It is moreover a fact that the results with fungicides in more arid districts are not applicable to our humid climate.* As is well known to all practical men, the conditions of temperature and moisture influence powerfully the development of the parasite, as well as the possible susceptibility of the host tree.

The writer deeply regrets his inabiilty to be present in person at this meeting.

ASSEMBLY ROOM OF THE BOARD OF TRADE,
COLUMBUS, OHIO, JANUARY 16, 1908,
9:10 A. M.

The 41st annual meeting of the Ohio Horticultural Society was called to order by President U. T. Cox.

The President: You will find that it is announced on the program that the first thing is to be the announcement of committees by the Chair. I have not got them all fixed up yet, and some of the people that I want on the different committees are not in, and I will defer that, and we will proceed to the next thing, which is the report of the Ad Interim Committee.

AD INTERIM REPORT FOR SEVENTH DISTRICT.

BY R. A. HUNT.

I regret that I cannot be with you today. In making a report after one of the most peculiar seasons on record for the counties bordering on Lake Erie, where felt boots were a luxury till way along toward the first of July, and then we had to don them again before the Salway peaches were ripe.

In fact, it was a cold storage all summer without ice or chemicals. The Bureau of Plant Industry sent blanks for date of blossoming, ripening of the different varieties and other orchard records.

I started in all right and dated the time of the opening of the blossoms. Then I stopped. I could make no record, if they did not drop till forced off by the growth of the fruit, which was very slow. It was so cold that the blossoms withered and dried up and clung to the fruit till partly grown.

Usually, we see the ground covered with the blossoms. Not so this season. Strawberries lost about one-fourth of the bloom by the late frost. The growers looked for fancy prices for the balance, but failed to realize it, as the weather was cool and the shipped berries came in first-class condition, equal to home-grown, except some fancy Bubachs, which still take the lead for near market.

The crop was all right for size of fruit, but not as sweet as usual, showing the lack of warm sunshine.

Raspberries, blackberries, currants, gooseberries. A good crop. I saw one lot of gooseberries sell for four dollars per bushel.

No cherries. A few peaches and plums. Duchess pears, heavy crop; other varieties usually light, with a few exceptions. Apples light and poor quality, except an orchard here and there, scattered throughout the Seventh Dstrict, owned by energetic fruit growers, who have reaped their reward this season for care and attention given their orchards.

As ad interim committee, I will report my success and failure with plums. Four years ago, all my plum trees bore a full crop, all varieties. I have three different sections. All had been kept in clean cultivation from time of setting. Understand, my land is *heavy clay* and would discourage my friend the secretary from Waterville, the first season.

I was tempted, after attending the state meeting four years ago, to try the sod culture. I will admit it is much nicer to walk on after a shower to trim or pick the fruit, but I haven't had the pleasure to pick any fruit from the trees in sod since, although they are the same varieties as the plat that has been kept in cultivation, from which I have had some fruit each year.

And this season bore 1,893 eight-pound baskets, including some drops after a heavy wind. The picked plums averaged 47 cents per basket; drops 25 cents. The varieties that did the best for me this peculiar season are *Shippers' Pride*, *Grand Duke*, *Gun*, *Lombard*, *Ponds*. I have 26 varieties, but no Damsons in bearing.

I can say this for the cold season: It was a blessing in some respects, it was hard on insects and fungi; good weather to handle fruit, no hustling required on account of warm weather, and I am perfectly satisfied with the results.

I saw an article not long since, stating that the dwarf pear trees were short lived. I set my first Dwarf Duchess 38 years ago. They are thrifty yet and bore this season at the rate of over twelve hundred bushels to the acre. All my varieties averaged $2.35 per bushel, including No. 2, and 75 bushels that I had to sell green, in order to get ready to go South for the winter. Green pears are usually sold at low prices on the market, otherwise the average would have been higher. I have some 20 varieties in bearing.

Experiment with spray material and scale. Two years ago I got the material for the lime and sulfur wash. My peach trees were badly incrusted with the San Jose scale. I wanted the job done right, so requested help from the experiment station, which was furnished at a certain date. As I was so busy with other work, I had to thank them for their kindness and let it go.

Some two weeks later, just as the blossom buds were ready to open, I read of Mr. Powell's success with scalecide. I ordered some by express. It was getting too late as I supposed. Blossoms partly open. I was getting desperate. Did not care if it killed scale, trees and all. But, to my surprise, it practically cleaned out all the scale. Could not find a single live one. The trees were very thrifty and healthy after the application.

I also used it in mid-summer for the scurvy bark louse, with good results and no detriment to the foliage. I find that this insect will kill a tree nearly as quick as the San Jose if let alone.

The Terrapin scale has made its appearance in our section. I first discovered it on a cut-leaf maple. It has been reported that L. S. S. wash has no effect on it. I gave it one application of scalecide, but the party owning the tree had the infested limbs cut off and destroyed before I could see the effects of the treatment.

From some unknown cause the scale in some sections the past winter and spring was nearly depleted, and trees that had no treatment and nearly dead, recovered. We can only conjecture that it must have been caused by climatic changes, from warm to cold. The same conditions did not affect the oyster shell or scurvy bark louse.

Does spraying with Bordeaux cause rust or discoloration on the apple? I answer yes; and also a spray from the clouds will do the same thing, when the conditions are favorable.

I have a Baldwin apple tree that stands out from the influence of other trees. The fruit on the east side was very much discolored, while that on the west side was free. A chance for theories. The worst discolored lot of Baldwins I ever saw was before there was a spray pump in the county. Don't give up spraying. Better have a little discoloration than worms. Unless you are like the man that would just as soon have his mince pie right out of the bin.

Every one that has used the scalecide in my immediate neighborhood prefers it to the L. S. S. wash. It is very convenient for small growers to use and for those who would not take the trouble to prepare other materials. It is just as pleasant to use as clear water.

AD INTERIM REPORT FROM EIGHTH DISTRICT.

BY L. B. PIERCE.

The year just passed was a decidedly off year for the fruit-grower. Cherries of all kinds, plums, peaches and apples were almost a complete failure. Pears and raspberries were not more than half a crop and blackberries about one-fifth. Strawberries and currants were about an average, while quinces alone gave an extraordinary or bumper crop. The cause of all this failure was weather conditions beyond the power of the growers to control, and for this reason unprofitable to recapitulate or moralize upon. The exceedingly rapid increase in population in northern and eastern Ohio is causing a consumption of fruits and vegetables far in excess of the supply, and were it not for the much-abused middleman, who reaches long arms in every direction, many people would at times get little to eat besides bread, meat, cabbage and onions.

Peach orchards are becoming very rare in Summit, Stark, Ashland and Wayne counties, and few new ones are being planted in Coshocton and Holmes. With other fruits, I believe the production of currants, raspberries, blackberries and quinces could be quadrupled without causing a glut.

The truck business has now a large following all through the eighth district and there are many farms of less than 15 acres each which comfortably support a family. Almost all gardeners, except those on swamps, now grow small fruits, as room for a few bushels can generally be made on a load of vegetables and thereby more than double the returns.

A good many foreigners are engaging in the truck business. They are mostly from Austria and Germany and generally begin by hiring out to an experienced gardener and learn the business while acquiring the language. At the same time, they save a little money. They then rent a piece of swamp and begin for themselves. If they have not already a large family, they acquire one. As their children may be catalogued under the heading of annuals, it does not take many years.

The women work in the field and the children learn to bunch onions and radishes and tie endive before they are old enough to go to school. In the families of these emigrant gardeners everybody works but "dad," and he is kept pretty busy drawing off and selling the products. The recent abnormal increase in population in the cities of northeastern Ohio, from Lorain to the vicinity of Pittsburg, is in a large part made up of foreigners and they are large consumers of certain kinds of vegetables.

The taste of those from Central Europe runs to turnips, carrots, radishes, cabbages, tomatoes and sweet peppers. The Russian Jews and emigrants from the Baltic states are large consumers of cucumbers and other pickle stock, as beans, small onions and beets..

Many truck farmers are building small plant houses and starting their own early plants. All kinds of plant production under glass is on the increase and seems to be quite profitable. One gardener told me recently that he had run in debt $4,500 to build two greenhouses and he was quite certain that if he retained his health they would pay for themselves in three years.

I notice that very few market gardeners affiliate with societies or join the grange, and most of them think they have trade secrets of their own and are quite chary of revealing them.

In ornamental gardening but little progress can be noted from year to year. What little is done is mostly confined to flower culture and is the work of the "women folks." Of course, this means the simplest kind of summer decoration. In a mid-winter trip to the southern part of the district on a sunny day, with bare ground, I failed to see a single instance, outside of villages, where any recent planting of ornamental trees or shrubbery had been made. Here and there dilapidated remains of bushes planted by a former generation still held on to life, but they were not ornamental.

Even the taking of preliminary steps in beautifying around the home; steps that required no skilled training, like evening up the lawn, cutting out interfering trees, removing unsightly objects and fixing of walks, seemed universally neglected around farm homes. Almost all houses needed painting badly and many costly barns seemed to be going to decay for want of paint and repairs. Just out of the district, at Canal Dover, is the largest collection of peonies in America. It is on the grounds of Chas. Betscher, a florist. He claims to have 1,200 varieties. He is also a very large grower of gladiolus. In October, I attended a horticultural gathering at North Amherst, at the home of Mr. Schmitkons. He had an orchard on which were hanging several thousand bushels of apples. This orchard had been sprayed by the experiment station through the season, but the spraying, while keeping the foliage free from disease and killing most of the offspring of the codling moth, seemed responsible for turning many of the apples from Baldwins into russets. I took home one specimen each of Baldwin, Ben Davis and Sutton, which were shown at a local horticultural meeting the week following and it was difficult to distinguish the variety, each being so much russeted. I have since observed apples closely and find that apples which were not sprayed, especially some varieties, notably Esopus, Spitzenberg, Baldwin and Grimes' Golden, were as much russeted as the apples in the Amherst orchard; so it seems the season may be responsible for it, although very likely the spraying intensified the blemishing.

The gathering was quite large for a local meeting, and a great success socially. A great deal of old straw was threshed over in the papers read, but was doubtless bound sheaves to a large majority present.

It is very difficult for station professors and editors, who are constantly called upon to tell all they know, to say something new at every call, so allowance must be made. The only lively discussion of the session was upon marketing apples, and it developed that many growers, situated at the very door of the best markets in the world. do not take advantage of up-to-date methods of disposing of their fruit.

In visiting this meeting in company with my friend Mr. Lewis C. Crañz, of Akron, we drove across the country in a carriage. Between Wednesday morning and Friday late in the evening. we covered 150 miles, with six hours at the meeting, passing through 15 townships and being in four counties. It was a most enjoyable trip. From Akron northwest, we were constantly passing farms for nearly thirty miles, which are owned by men who frequent the Akron market, and the first day visited several fruit farms, some of which have fine records for immense crops of berries.

The farm homes in Medina and Lorain counties have a thrifty, well-cared for look, most of them being kept mowed and nearly every house had flowers growing. A friend in Brunswick, who moved onto his place about 17 years ago, says he was the first to use a lawn mower in that section and the neighbors cracked jokes at his expense. Now they all have them.

The flowers used for decoration were various, but petunias, asters, nasturtiums and salvias had a distinct lead over all the rest. The salvia business seemed very much overdone, although perhaps earlier in the season it would have appeared different. This bright and showy plant is not suitable for indiscriminate planting, as its nature of growth is such that it does not adapt itself to all positions as readily as the petunia and nasturtium. The country around Amherst is rapidly becoming a garden country, the insatiable demands of Elyria, Cleveland and Lorain, making it imperative that gardening methods should take the place of the old-time ten bushels to the acre practices.

I will say that Barberton and Lorain have made great increase in number of inhabitants within the last few years. They have almost grown up in a dozen years. The population of Elyria has increased 5,000 in two years, and Akron, which had less than 40,000 at the last census, now claims 61,000. So you see we are growing some.

We were on the farm of one man who on Saturday had picked 45 bushels of strawberries, and taken them into the market and sold them at $2.75 a bushel. He picked over the rest of the piece on Monday, and on Tuesday he took in three wagon-loads amounting to 120 bushels, which he sold at $1.50. These were quite soft, and he got a good price for them, considering the quality. These were one picking from about an acre and three-fourths. I saw the berries sold, saw the wagon on the market, and know the berries were sold, and I saw the piece of ground they grew on—at least the gentleman said they grew on that piece of ground. That is 175 bushels and 29 quarts at one picking from less than one and three-fourths acres. It would not be but fair to say that they were in poor condition the last day.

The Secretary: Of what variety were they?

Mr. Pierce: He called them the Manville. It is one put out by an

Indiana firm, and introduced by Kellogg years ago, and it is not generally known. Half of it is in that and the other half is planted with Senator Dunlap. If we have a cold season and then it comes warm you can get nearly all of the berries at one picking. The other half, the Manville, is a berry that nobody grows but him, but it is like the Dunlap in appearance. He hasn't tried to keep it to himself. He put in twenty-five varieties of plants, and fruited them for a couple of years, and his daughter, who manages the pickers, was so pleased with this variety that they increased their planting and grew a good many of them. The gentleman is Mr. Harry Williams at Brunswick. I might take time to say that two gentlemen in some way connected with Professor Green, by the name of Hunt, have been bringing berries to the Akron market ever since the war. One was a soldier that went into the fruit business soon after he came back from the war. One lives on the place that Mr. Green started, and is now receiving the rewards of Mr. Green's planting. On that road are some species of Norway spruce and some other kinds of trees.

Professor Green: There are some balsams there.

Mr. Pierce: There is about a mile of road on the Hunt place, and on Mr. Green's property, and on the old Sylvester place. Mr. Sylvester was noted for Shorthorns a good many years ago, and Christmas cattle. There is about a mile of undulating road bordered by Norway spruces, and it is as pretty a drive as I have ever passed in Ohio.

My district includes Summit, Stark, Wayne, Holmes, Coshocton and Ashland Counties. I have not been able to get much information from Ashland County, and I have not been that way in the day time. I understand that Ashland City is increasing rapidly in population, and that there is a good deal of gardening going on. The experiment station men know much more about that than I do.

Professor Selby: I would like to ask about the condition of the raspberry and blackberry plantations. How are they doing?

Mr. Pierce: A good many raspberries were weakened by the winter and cut off. There are hardly any blackberries, and it is hard to give any definite guess at what did happen, because the berries did not appear healthy the year before. I do not know what was the matter, but the leaves curled up. With anthracnose of plants they don't generally die until the fruit is about half ripe, and then if it is a real dry season they fizzle, but these didn't get that far along. They were weakened the summer before, and were winter killed on the low ground where there was a low swale through it, and in the valley—the plants in that valley were winter killed before they had a chance to leaf out. There were hardly any blackberries. The blackberries that did amount to anything were mostly those that were neglected the year before. Those kept as they should be kept were failures. It often happens that way. It is not exactly the thing to advise shiftlessness, because when you get a real nice blackberry crop they bring a big price, and you have a large crop. But you sometimes get them when you wouldn't with any cultivation.

The President: Are there any others ready to report?

Mr. Shirer: I have my report ready now.

The President: All right, we will now hear from Mr. Shirer of the Third District.

Mr. Shirer: Pears, plums, apples and peaches, we had a few, but very few. Small fruit, a very good crop, but I might add that black raspberries are badly diseased. The anthracnose and something else, I believe, I don't know what to call it, but the black raspberry patches are getting in bad condition. The red raspberry had what we call the root gall, so it is getting a difficult matter to grow red raspberries at all. The grape crop was very good. There was some rot in some localities. Currants almost a complete failure. A few gooseberries. I might add that the catalpa trees are badly diseased in some localities. We have a few on our place that are almost dead. Trees that are at least forty feet high. It seems that one limb or a few limbs die each year.

Mr. Pierce: Is that speciosa, the native?

Mr. Shirer: It is what we call the hardy catalpa. They are nice, straight trees. I hate to lose them. By the way, I might say that we had one tree that was very badly diseased, and lightning struck that tree, and it actually revived it for a couple of years. That brings me to a point. Perhaps some of you read a book called "The New Agriculture," by T. Byer Collins, and he has some wonderful tales in there of what electricity will do for the horticulturist. He said that it will increase the strawberry crop over 100 per cent. by running a kind of electricity through it, and that it will come thirty days earlier; and raspberries will come earlier, and the corn crop and the wheat crop all can be increased 50 per cent. So it may be we can cure diseased trees by giving them a good shock of electricity. Those who experiment might try it. As to market gardening of vegetables, we are in a flourishing condition. Everything is selling high. Of course there are always some failures everywhere, but as a rule we were successful. I might say that our Dayton market is rapidly taking on a very nice appearance. I mean as far as cut flowers are concerned. We are priding ourselves that we have the nicest market in the State of Ohio, especially when the season for flowers is in. This is merely for Montgomery County, but Mr. Pollock of Clermont County had a very good crop of apples, and I suppose Mr. Roudebush might tell us others who had apples, but they were few and far between.

Fruit growing has been on the decrease for several years in Miami County. Many farms are without orchards for home supply. But few trees of any kind are being set since the plum craze of a few years ago. Many Japan plums which were set out with rosy hope eight or ten years ago were grubbed out last spring at an addition to the list of horticultural failures. Many small farmers who a few years ago devoted much attention to small fruits are now growing tobacco instead.

The past season has been an unusually hard one for those still depending on fruit for profit. An unusually warm March started the buds, which a succession of late freezes killed. Except in a few protected spots, apples, pears and cherries were a total failure. There was a sprinkle of peaches where there were trees, but not enough to give the crop a money value. Currants and gooseberries were a complete failure.

Blackcap raspberries were so badly winter killed that but few berries were offered on the market. Purplecap and red raspberries were a good crop, and commanded high prices, 18 cents per quart being the average price secured on the Troy market.

Blackberries were an immense crop, and brought fair prices. Early harvest selling at 15 and 18 cents; wild ones at 10 cents per quart. There were more wild blackberries on the market than for several years past.

The strawberry crop was greatly reduced by frost and hail, but sold at a high price, retailing from 10 to 20 cents per quart.

Early Harvest is still the most profitable blackberry. Early King is promising. Cardinal bids fair to place raspberry culture again in the profit column. Senator Dunlap is gradually supplementing other varieties of strawberries.

Potaties were rather a light crop, many fields being partly destroyed by floods. Irish Cobbler is supplanting other early varieties. Carmen is still the leading late.

The northern half of the county was visited in May by a series of hail storms, which did great damage, totally destroying many early garden crops.

Mr. Roudebush: I think that incidentally Clermont County has been mentioned. It might be well to give some of the conditions that were extant there the present year. Apples were an unknown quantity except on sprayed orchards, and there, about 25 per cent. of a crop. Peaches about 3 per cent. of a crop, but of the largest size, and finest quality ever known in the history of Southern Ohio. I expected to have had some photographs here with the data showing the immensity of them. Black raspberries were a failure. They were affected by anthracnose, and were winter killed. Red raspberries of some varieties were winter killed, particularly the King. The old fashioned Turner and the Cuthbert seemed to withstand the winter. There were no plums, no cherries, no pears. There was an abundant crop of strawberries on good situations. Prices for fruit were never so high, and that is true on some vegetables.

Mr. Shirer: Has the King got the root gall?

Mr. Roudebush: Not to the extent that other varieties have, the

Blackcap. The Kansas was supposed to escape, but in fact it did not ultimately prove to be as hardy as the Cumberland.

Mr. Gill: Since Mr. Hyde is not to be here I will speak in reference to Ottawa County. I don't know as to the other counties in the district. I notice in most of the papers that they speak of the decline of the peach business, that orchards are declining and being taken out. That may be a discouraging outlook for you in reference to your future peach prospects, but that is not the case in Ottawa County. The acreage is increasing, and you who want to grow peaches had better sell out where you are and come to Ottawa County and make purchases, for the acreage there will be very much increased in the next few years. As to the crop this year, we had about 25 to 40 per cent. of a crop and about 200 per cent. advance in price. The apple crop was pretty nearly a failure. Some orchards had some few apples, and some pretty fair crops. They varied a great deal and prices of course were very high. The small fruit we do not care so much for. Peaches, apples, plums and pears constitute our fruit. The pear crop was a pretty fair one, and the prices of course were pretty high. The manner of selling the peach crop is very largely that at the block, where they are sold at auction, and there of course the highest possible price is procured. The sending away of peaches to the commission merchants has become almost a method of the past. The buyers were there from almost all the states in the Union, at least all of the Middle and Eastern States, and were numerous, and they competed in price, and bid to the very top notch. I think the fruit grower got the best end of the transaction.

Mr. Montgomery: I want to ask if we come to Ottawa County, about how much we would have to pay for that land?

Mr. Gill: A good deal.

Mr. Montgomery: Then it has increased the value of the land?

Mr. Gill: Yes, sir. If you bought peach orchards planted, it would cost about $300 an acre, and you would have to pay about $200 an acre for pretty fair land that has a prospective value for peaches.

Professor Green: One thing Mr. Pierce said that requires more than passing notice. He referred to the fact that he passed by a piece of land I once owned and sold. I planted on that one variety of pear called the Mary about twenty-seven years ago, and it is a remarkable fact that this variety with its dwarfed trees are still in pretty fair condition, and they have yielded a very large profit to the owner. I do not know any other dwarf except Duchess that would yield that well. I had a good deal of faith in the Mary. It is an early pear, very beautiful, and sells well in the market, and its great value is that it is very successful as a dwarf.

A Member: Can those pears be obtained now?

Professor Green: I am sorry to say I do not know where you can buy them. I know where I can get the stock.

Mr. Cole: It is grown by the Painesville nurserymen.

Mr. Pierce: That ought to be introduced again. They are handsome, yellow with a red cheek, and they bring about $2.50 a bushel in the market. There has been a pear almost identical with it. Charles A. Green introduced the pear. It is very much like the Wilder.

A Member: The Comet?

Mr. Pierce: The Comet is inferior.

Professor Green: I have the three growing, and I think the Mary is the best of the three. It is free from blight and bears heavily and brings good prices. The Comet is inferior. They are healthy and bear pretty well, and although they are very beautiful and larger than the Mary, I believe the Mary is much the better. The Wilder I have not had much experience with. It is larger than the Mary, is not so brilliantly colored, and so far has not proven so productive.

Mr. Pierce. I might give the history of those pears. I knew the man who introduced the Mary. There was a nursery in Cleveland at the time of the war, and afterward run by Leonard Case, a rich man of Cleveland. He ran the nursery, and Christopher Wigald, a German, had charge of that nursery. He found the trees growing in Liverpool, Medina County, two seedling pears, and he took them and propagated them, and named one Mary and the other Margaret. I have some of them growing. I sold many trees of them when I was in the nursery business, and quite a number of the trees have been growing forty years. The Margaret seems to be a cross with some of the native pears. It gets mealy and mushy, and does not ripen nicely. It is a very nice pear, but not of value for fruiting. I have the variety on trees 42 or 43 years old. By the way, I do not know of anything that anyone could do better than to plant pears. I would rather put my money into pears for my old age than anything else I can think of.

Mr. Shiveley: In several reports that have been given here this morning the writers have touched upon the topic of market gardening to some extent. This matter appeals to me as being one of importance that might be taken up in the papers occasionally in our Horticultural Society, from the fact that some of our gardeners in our county, Ross, have been very eager to get your reports of the State Horticultural Society, and the question was asked me some time ago, why not embody the matter of gardening or combine it with the Horticultural Society, and give us gardeners a chance to identify ourselves with you. That matter has been taken up in our local society, and we find we can create a good deal of interest along that line with market gardeners, and it occurs to me you could create an interest in it by having a paper occasionally, and those reports may get out to interest the market gardeners, and they may become interested with us in these annual meetings.

Mr. Phelps: I do not think the horticulturists of Ohio need have much fear of the Southern fruit. My friend Mr. Burns and myself were in Arkansas last September. From our observations there I do not think the horticulturists here need fear anything from that section. Unless some Ohio men go in there to take care of their fruit, they won't have any fruit. I know there is a great deal of land within twelve miles of Columbus that will pay ten times better than that land down there. In Arkansas, 100 miles west of Little Rock, in the Ozark Mountains, every farm has from five to thirty acres of fruit set out on it, but they are not taking care of it. They don't know how. One farm had about 300 bushels of fruit, but that was shipped south to Texarkana. They paid him $1.00 a bushel down there for apples. Apples are not plentiful. There is a line of railroad nearly 400 miles long to the Gulf, and so the market goes south along that railroad to the Gulf. It makes a great market south, and most of the fruit will go there. One gentleman near Coe, Ark., who had 80 acres of apples and peaches had been very successful. He also had six and one-half acres of strawberries, and he told me he realized about $600 from those strawberries. But the people generally are losing their trees there. They do not take care of them. You must spray them oftener there than here. There are more insects to contend with. So I do not think the horticulturists here need fear anything from that quarter. It takes from 30 to 40 hours to get fruit here from there, and I believe if we go to work here in Ohio we can raise better fruit than we have raised, on lands that are now going to waste.

Professor Davis: I would like to emphasize the remark Mr. Shively made in regard to the matter of the vegetable industries of the State. When you come to realize the value of the vegetable products, and the value of the fruit products, we find that the value of the vegetable products amounted to about $12,000,000 for 1899. The value of the fruit products of the State for that same year amounted to about half of that amount, and it seems to me that the vegetable growing interests of the State should receive much more consideration, and a larger place on the program of the Horticultural Society than it has in the past.

The President: Perhaps Mr. S. R. Moore has a report.

Mr. Moore: I have no written report. I just came in late, and I expect that they have reported about the same thing that we could report from Muskingum County. There are two men in our county who are special orchardists. They both had a good crop in 1906. This year one didn't have any, and the other had a partial crop. One is on the eastern side, and one is on the western side. The one on the west side had a partial crop of apples. I do not know whether Mr. Knellinger sprayed any last year, but he had a very good crop of apples. But this year he had nothing. Pear growers had a fair crop of pears this last year, and they brought good prices. The vegetable gardeners—we always overlooked them—had a good crop of pretty nearly everything except melons, and yet there were a few good melons, and I think if there was anything that sold in the market cheap it was cabbage and melons. I bought a big melon for 20 cents, and I thought that was not a very high price, and I don't think the man would get rich raising melons like that for 20 cents, and the crop was not big.

A Member: Was there a frost on them?

Mr. Moore: No, the frost struck you orchard fellows. Near the city limits we have a little orchard. We had there some very fair apples and some poor ones, but yet if we had had a good crop we couldn't have sold any. We got more money I suppose than if we had a good many more apples. The weather conditions I suppose were about the same all over the State, and of course we had our share of the wet weather and rain. Along in October, however, there is one thing I want to refer to. In October I had a little occasion to go to the northwestern part of the county near the Knox and Coshocton and Licking County lines, and I want to refer to a ginseng garden I visited there. I don't want you to make fun of me or to go into the ginseng business in order to get rich, because I do not think we all can undertake to grow ginseng successfully. Mr. Montgomery here probably knows something about the ginseng garden I speak of belonging to Mr. Jacob Ashcrast. He lives on a high hill, and he has a ginseng garden, and I had been desirous of seeing it. He is about five miles north in Muskingum County in the northwestern corner, almost on the line. I was going to say that Mr. Ashcrast commenced, I think, five or seven years ago to grow ginseng by going into the woods and starting in a small way with what he had in a little basket. He has continued that until the present time with a good degree of success. When I say he has so much in ginseng I know that he has, because I was there and saw it. A quarter of an acre of his ginseng is on a steep hillside, and it is in something like terraces, with little narrow walks. The terraces are six or seven feet wide, and he grows this ginseng on those beds with these little walks between. He has it all covered with slats and there is a quarter of an acre in that place. Then he has another plat of ground up in the forest. Now I should say that it is what we call a chestnut soil. There was a good deal said last night about chestnut trees and chestnut soil. This is a sort of a sandy or rather a sandstone soil, and he throws these beds up, and covers them with rotten sawdust. It has been rotten for several years, and there is where he secures his growth, growing his seedlings and so on. He has this other place that he has now almost completed in among the original forest trees, some not very large trees, but I do not think he will make that do as well, because I think the roots of the trees are absorbing too much from the ginseng. Now in gathering the seed this last fall they kept account of the seed gathered until they had twenty-eight gallons. Of course there is a little pulp with this seed. The way they handle this seed—I am going to describe that, because some may be interested in this matter. They have a very fine screened sand. They put this little berry or fruit in that sand, and after it is sufficiently free from pulp they sift it again, and then they have the seed. Twenty-eight gallons seems to be a good deal of ginseng seed to be gathered from that little place. That quarter of an acre—they didn't gather seed from that; that is largely one and two year old plants. I took a few items that he had there. He had about 12,000 four-year-old plants. He had about 30,00 three-year-old plants. He had 125,000 to be planted out this spring, that is, the spring of 1908. Then he has 150,000 one-year-old, that I guess he is going to put on the market, and then he had about 75,000 two-year-old. I asked one of our mechants who deals in ginseng in the city, in fact, a couple of them about it. One, Mr. Gallagher, who deals in ginseng—I asked him just a day or so before I came here how much he bought this fall. He said from 10,000 to 15,000 pounds of ginseng. I said, "How much did you buy from Mr. Ashcrast?" He said about 80 pounds. I asked him how much he paid a pound, and he said $6.50 a pound for it. I asked another man who bought a little quantity on the west side of the river. I said, "Did you buy any ginseng this year?" He said, "Yes, fifteen pounds." I said, "How much did you pay for it?" and he said, "Five dollars and fifty cents a pound." I suppose he simply took it across the river and got an extra dollar for it. Mr. Gallagher has been at the purchasing of ginseng for thirty or forty years, and he tells me that there is a combination in New York and China. He sends his to New York direct to a commercial Chinaman there, and he thinks they have a corner on the ginseng, this combination. The more ginseng looks like a little man, the more virtue it has in its healing qualities. What it is used for nobody ever knew. I never found anybody yet who could tell what it was used for. I am told a firm in Cincinnati sent a man to China a whole year to find out what they used it for, and he came home and didn't know.

A Member: I can tell you. The Chinese use it extensively for medical purposes, and they have an idea that it is a preventive of old age. We would do the same if we thought that—we would buy it, too.

Mr. Moore: I believe it is good for me to commence chewing a little of it then. I did taste it.

Mr. Montgomery: You are younger than you were last year.

Mr. Moore: It tastes a little like licorice root. It has a little astringency. Maybe it is used for what he says it is used for, but that doesn't keep time from going on.

A Member: Did you eat any of it?

Mr. Moore: Just a little piece this fall. It was too expensive. I would not want it for an every day diet. I just mention this as a rather new subject for introduction to the society. I have no interest at all in it. Some people have an idea they are going to get rich quick by going into the ginseng business, but ninety-nine out of a hundred fail. There is another ginseng, I am told, put on the market that is called Japanese ginseng, that looks like the other, but they tell me the Chinese know the difference between Japanese and Asiatic grown ginseng. This comes from Asia. Of course the ginseng is found here in the forest, but it is getting very scarce. You know they have ginseng hunters that make a business of getting it. In all localities it may be found, but especially through Kentucky and Ohio it is grown.

A Member: And West Virginia.

Mr. Moore: Yes, also West Virginia and other places, Michigan. Mr. Gallagher is the best posted man I know of as to ginseng; that is, he is a buyer. He knows nothing about the growing of it. There has been a good deal said about it, but I don't want to mislead anybody or try to make them believe they are going to get rich quick by going into ginseng. I have a cousin who has tried it a little and he has time to burn. He tried it a little bit, and succeeded pretty well in a small way. It takes one year to stratify the seed, and the next year it will come up. The most of us, especially if we were careless, would allow weeds to overgrow it, and we wouldn't have any. I know of several cases where it has been tried. I know a party down in the eastern part of the county, who has a little bed, and he sells about $75 worth a year. If a man wants to try it he can get the right kind of seed, but there is a good deal of that Japanese ginseng put on the market by some people who perhaps do not know the difference. I do not know that I have anything else particularly to report, but I just simply give you this as a matter that we never had up before the Society before. I have no written report. I think if anyone wants to go into the ginseng business he had better see somebody before he starts.

Mr. Roudebush: Have you heard any complaints of a disease somethink like the wilt in cotton? I am afraid some get oversanguine, as some of my friends did in Kentucky. They absolutely lost out in half a dozen different places. They were down in the mouth. It didn't grow, and I think under artificial conditions it becomes diseased. If you look up some of the diseases of it in the New York Bulletin it will be very helpful indeed.

Mr. Moore: They had some that seemed to die that way, as you say. I forget just the condition they said that left it in, but it was only with a few plants. I am not going into the ginseng business.

Mr. Shiveley: I do not want to encroach on the program, but would just add to what Brother Moore has said, that we have a gentleman in our county who is vice president of our Horticultural Society, who has been engaged in raising ginseng for several years, Mr. Fred Seeling, and while he is making a success of it I am afraid if we went into it we might become overenthusiastic to the neglect of our orchard, as Mr. Seeling has done. He has made it a success, but I think that we shouldn't undertake too much.

Professor Green: Mr. President, I think our time is too valuable to listen to verbal reports.

The Secretary: I only want a moment's time to refer to a question that was mentioned just before this, and that is that of the vegetable growers. You remember a few years ago we usually had these topics on the program, but as Mr. Pierce said the gardeners were disposed to be clannish, and generally they had trade secrets. Probably that condition is changed. We have younger men coming on now who realize they can learn from some one else, and it is possible that we should do something about it. We are confronted with this difficulty. You who have examined the program see that it is crowded, and the members do not think that they can spend more than two days here. Other things, vegetables, forestry and ornamental planting, are thrusting themselves upon us, and there are so many things that it seems to me we must either devote less time to the question of fruit, or spend more time here, or give less attention to the vegetables than we would like. And this morning we are getting into deeper water, because next year we shall probably have to devote one session to ginseng.

Mr. McCowan: It seems to me the fruit business is too important to be pooled with any other business, and in doing that we detract from the business we are engaged in. I do not believe it will stand any division. If we are successful in fighting the enemies of fruit, and in getting the object lessons which we have, and which are before us to get, learning when to spray, how to spray, and what to spray with, and for, we have more than two days' work before us. It is plain to all of us that we have neglected spraying many times when it would be very valuable to us as a money making crop, and also detrimental to our orchards. The fact is we go out in the springtime and notice that there are but few live fruit buds, and but a small set of fruit on the trees, and become discouraged, and say that we will wait another year to spray. When we do that we simply place our trees back in an unhealthy condition. The orchard is not in condition to bear a crop the following year, neither will it bear a successful crop the next year, for the insects which have accumulated on that tree or orchard during that year, which should have been killed, will be in larger quantities the coming year than had we sprayed. So it seems to me that we cannot hire a man to go out and fight, especially the codling moth. I never saw one yet that was fast enough. It will get ahead of him. We must love our business. We must go into it to win, and we will win. It takes but very few apples, if we take care of them, to make a paying crop. Many times we feel that our fruit crop will not pay us anything whatever, as it was this spring. Yet if we successfully fight the enemies to fruit we will have a paying crop. I can say this year that at one time I felt that 75 cents an acre was a fair price for the fruit that would be gotten, and yet I realized a clear profit of $75.00, and I would like to know the conditions under which the rust appeared on the apples in the northern section of the State of Ohio. Now spraying in no sense brings these conditions on in the southern part of Ohio, and I feel that it was through neglect that it was done. I would like to hear from the gentleman why or how it happened to rust the fruit to the extent it did.

The President: The gentleman who just spoke owns the farm in the southern part of Ohio where the original Rome Beauty grew. He has some apples here from the original farm.

A Member: I want to make a little report from Saline, Jefferson County, Ohio. That strip just along the river is great apple country. Across the river in front of my house I suppose there are 40,000 apple trees bearing. And on this side of the river where I live there are many trees also. We had probably 20 per cent. of a crop this year. It has not exactly struck me as yet, but all south of me the trees are all dying and we are going to lose them all. It is caused by the salt from the pipe works. My trees are all young. I think we will handle them for a while yet, but we are playing a losing game, and there will be one apple country out of the way.

The President thereupon announced the following committees:

Superintendent of Exhibits—M. E. Corotis.

Committee on Exhibits—S. R. Moore.

Committee on Essays—T. E. Carr, J. J. Crumley, C. W. Montgomery,

Committee on Scoring—C. W. Waid, C. E. Bassett.

Committee on Resolutions—S. R. Gill, F. H. Ballou, W. G. Farnsworth.

Committee on Business—C. W. Montgomery, Lowell Roudebush, W. N. Scarff.

AD INTERIM REPORT FROM SIXTH DISTRICT.

BY M. I. SHIVELY, CHILLICOTHE, O.

Mr. President and Members of the Ohio State Horticultural Society.—It affords me great pleasure to be present with you at this the forty-first annual meeting of the representative fruit growers of the grand old state of Ohio. We are here again as a loyal family of fruit growers, representing our chosen profession, with greetings to old friends and new acquaintances, to review the success and failures. Hoping to be able to gain some information of value to carry back to our friends that may give them some new light in the many dark mysteries of horticulture.

If we like our profession, disappointments should not discourage us. True success is the result of untiring and persistent effort. We must climb life's ladder round by round. Today is ours; if we sow today, we may reap tomorrow.

Years are made up of days. We should be careful how we spend today. Remember, it is worth just as much as any other day in the year. This is a busy age. Man in any profession should take a little time to reflect on the events of the past year. We, as fruit growers, do not think enough. We do not experiment enough. We follow in the trodden pathway of our forefathers; successes then are failures now. Think what efforts you have made to accomplish something. Why were those apples so knotty, wormy and worthless last season? Did you prune properly? Did you cultivate or mulch your trees to keep down weeds and sprouts? Did you spray thoroughly? Were results satisfactory? If the season brought you disappointment instead, study the cause and resolve to make greater efforts to overcome the difficulty this year.

The pathway of the fruit-grower in the sixth district last year was not a bed of roses to those looking on the dark side of conditions. Unseasonable weather in February and March brought forth buds, followed by severe freezing weather, blighting hopeful longings for a general good fruit crop. Farmers or small growers of fruit in many sections of the sixth district have become discouraged, allowing their orchards to go to ruin, preferring to buy their fruit from commercial orchardists, they say, at less cost than to equip themselves with improved implements and machinery for spraying. The sooner this class of farmers quits growing fruit with present methods the better it will be for the up-to-date progressive growers, who have spent money and energy to fight and destroy insects bred in their neighbors' neglected orchards.

The apple crop the past season has been a varied one. In the south and central parts of the district the crop was fairly good, in a few orchards where judicious spraying was done. While in the north and western sections, the crop was almost an entire failure. Prices, however, ruled high, selling from the orchard from 80 cents to $1.25 per bushel, only a very small per cent. of 1906 crop barreled or shipped. Twenty per cent. of a full crop will be a high estimate. In my home county (Ross) a few orchards that bore a light crop in 1906 had a fair crop last year, but quality generally poor. Similar reports came from Lawrence, Jackson, Fairfield and Highland counties.

Conditions were not favorable for the proper care of the orchards last year. Cold, wet weather continued throughout the spraying season, making the work ineffective, the result of which was a poor lot of fruit.

The varieties of apples grown here that are most productive and profitable, at least in the central section of the district, are the Red Astrachan, Yellow Transparent, Maiden Blush, Grimes' Golden, Smith's Cider, Rome Beauty, Mann, Stark, Imperial and last, but not least, Ben Davis, the mortgage lifter.

Peach growing is a lost art in many sections where heretofore it was the leading crop. Climatic conditions and the many diseases the peach is heir to have almost annihilated the many large peach orchards and very few new orchards are being planted. The crop on the few remaining ranches was nearly a failure. Warm weather in February and March caused the buds to advance too rapidly, followed by killing frosts in April and May killing the buds, hence the failure.

Grapes, pears, plums and cherries are entire failures. Small fruits a fair crop. Strawberries selling for $2.50 to $4.00 per bushel. Raspberries scarce, Black Caps bringing $3.00 to $4.00 per bushel, Reds as high as $5.00 per bushel. Wild blackberries a bumper crop, selling at about the cost of picking. Many growers of the improved varieties of small fruits, who had dropped out of the business a few years ago on acount of low prices and scarcity of labor, are again stimulated to begin anew.

The Secretary: If you will allow me I would like to say a word. One way out of our dilemma of having a crowded program, and of not having time enough to get all we want on the program, is to hold more meetings throughout the State, one or the other. I do not know of another Horticultural Society that tries to get along with one meeting a year, and we should have several either as a whole, or else have our annual meeting here, and then sectional meetings throughout the State, one or the other. This matter might be left to the Executive Committee, if you see fit, but I know they would be glad to have some suggestions from you. We are not doing the work we ought to do.

The President: We will next listen to a paper by Professor V. H. Davis of the Ohio State University on "The Effects of Various Cover Crops on the Temperature and Moisture of the Soil."

The growing of "cover crops" in orchards has become a universal practice where modern methods of management are attempted, especially in the growing of the peach. While clean culture, followed by "cover crops" during the latter part of the growing season, is being replaced by the "sod mulch" system of management in apple orchards to a great extent, there are still many apple orchardists who prefer the former method and there are doubtless many localities where its continuance is yet most desirable.

We have been told, in part, at least, what we may expect cover crops to do. Considerable work has been done from time to time on the effect of various crops on the moisture content of the soil, but very little has been done to determine their direct effect on the temperature. While other results have been noted from time to time, the effects on moisture and temperature are doubtless among the most important.

With a view of studying these factors in connection with a number of crops available for "cover crop" purposes in this locality, a series of experiments were begun under the direction of the writer in the summer of 1904 by Mr. N. E. Shaw, then a junior in the College of Agriculture and now of the State Nursery and Orchard Inspection force. The work was carried on in a careful and painstaking manner for two seasons, beginning August 10th, 1904, and ending May 15, 1906.

The results formed the material for one of the best theses that has ever been presented for graduation in horticulture and forestry at the university.

The site selected for the experiment was a pear orchard of some ten years' growth, located on the upland of the university farm and sloping gently to the west. The soil had received uniform treatment for several years. During the summer of 1904, a crop of early potatoes was grown between the trees. These were dug about the middle of July and the ground thoroughly cultivated, preparatory to the sowing of the plots.

Eight different crops were selected, representing leguminous and non-leguminous crops, those killed by frosts and light freezes, and those living through the winter; those making a dense, matting growth and those leaving a loose, rough surface after growth stops. Each plot occupied one row of trees and they were as follows: (1) cow peas, (2) Canadian field peas, (3) hairy, or winter veitch, (4) rape, (5) check (clean culture), (6) oats, (7) corn, (8) rye, (9) buckwheat.

In making the moisture determinations, an ordinary soil sampler was used. Samples were taken at irregular intervals of the first and second foot, two samples being taken for *each* depth from different parts of *each* plot and placed together, in order to give a better average. The temperature was found by means of an electrical thermometer. The bottom of the coils were placed 18 inches deep. These coils are about six inches in length, so that the six inches just below the surface foot was the depth for which the temperature was determined. This depth is usually below the freezing line in this locality, yet responds quite readily to the changes in the air temperature above.

The second year's work was simply an effort to duplicate that of the first. The same crops were sown on the same plots (excepting plot 1, where soy beans were substituted for the cow peas). The plots were sown August 10, 1904, and July 15, 1905. After the crops were plowed under in the spring of 1905, the the orchard was kept under cultivation until July 15. Both the cultivator and smoothing harrow were used after each rain and as weeds appeared.

Each year the seed bed was thoroughly and deeply prepared (4 to 6 inches) and the seed, excepting the rape, drilled with a grain drill. Our own experience has led us to believe that the drill is the only satisfactory way of sowing cover crops from year to year. Sowing must always be done at a season of the year when moisture, to insure quick and satisfactory germination, is likely to be wanting in the soil. The drill places the seed evenly and at a greater depth than would be possible by sowing broadcast; and leaves the soil in the best possible condition to lift and hold the moisture to, and around the seed. Good germination and crops that thoroughly cover the soil, with all the attendant advantages, can usually be depended upon if the seed bed is thoroughly fined and compacted, and good seed and plenty of it is sown with the drill.

During the two years nearly 550 separate moisture determinations were made and over 450 temperature readings taken. I cannot weary you with the tabulated results of all this work and must confine myself to summarizing only. In comparing the results for the two years, many differences were noted. These, of course, were to be expected. As no two seasons can be exactly alike as to rainfall, temperature, etc., the crops for each will differ in their growth and their accompanying effects upon the soil. The total precipitation from the time of sowing until first frost came was 3.42 inches for 1904, and 13.87 inches for 1905. It must be remembered, however, that the plots were sown almost a month earlier in 1905 and that the first frost came almost a month later the same year. Thus the large rainfall for the growing season of 1905 covered nearly two months more time than in 1904. The sowing of the crops a month earlier one season, together with the heavier rainfall that occurred, was beneficial to some crops and detrimental to others. Oats and rye made an excellent growth and cover the first season, but very poor the second. The growth of corn was much heavier the second season, while there seemed to be little difference in the other crops. The field peas were killed very early both seasons by plant lice, after which the moisture and temperature conditions very nearly approached those of the check plot.

Among the first noticeable effects on moisture was the preventing of the rapid loss of the rainfall after growth started. In every case moisture determinations made very soon after heavy rains, showed a smaller amount in the check plot and in those where the crops had made little growth. See table I.

TABLE I.

How Cover Crops Catch and Hold Moisture.

Percentage Moisture Present For Dates Indicated.

	1904 Aug. 27	1905 Aug. 26	1905 Sept. 19
	Per cent.	Per cent.	Per cent.
Cow Peas	42.82	9.11	21.01
Field Peas	39.26	10.04	21.64
Vetch	41.95	11.45	22.61
Rape	46.27	9.27	21.07
Check	38.28	8.77	20.54
Oats	51.05	9.74	23.46
Corn	43.53	9.50	23.32
Rye	36.01	10.75	23.30
Buckwheat	46.21	9.83	22.49

This retarding of the loss of the rainfall for a short time after rains occurred was apparent during the entire season. While nothing was done in this experiment to determine the effect of such management on the soluble salts, enough has been done elsewhere to warrant the conclusion that a system of surface culture during the earlier part of the summer sets free a considerable amount of plant food, *i. e.*, renders it soluble in the soil water. Growing plants on the soil during the latter part of the summer prevents the rapid loss of the rainfall that must contain large quantities of this plant food in solution, until the plants have an opportunity to take it up in large part and build it into plant tissue, which is eventually returned to the soil and trees. Within a short time after each rain these conditions were reversed. That is, the plots with the best cover of rapidly growing plants soon showed the least amount of moisture present. Transpiration of the moisture through the plants and evaporation from the soil is more rapid than evaporation alone from the uncovered plots. This removal of the soil moisture, together with the locking up of soluble plant food, rendering it, for the time, unavailable to the trees, is of great importance. It naturally follows that if these two effects do occur the growth of the trees will be checked and they will mature earlier than they otherwise would do.

While our experiment left no doubt about the removal of the moisture by growing crops, and while there can be no doubt but that a considerable amount of plant food must have been taken out of the soil by the growing plants, that would otherwise have been available to the trees, we are not sure just *how much* growth was retarded and just how much hardier and better prepared the trees were for winter as a result of the use of cover crops. A considerable number of what might be called accidental experiments, and a few others more or less directly planned, have left little doubt but that trees in orchards so handled are less likely to winter injury.

TABLE II.

Removal of Moisture by Growing Crops.

Percentage Moisture Present For Dates Indicated.

	1904 Sept. 17	1904 Sept. 24	1904 Oct. 12
	Per cent.	Per cent.	Per cent.
Cow Peas	15.01	14.78	15.89
Field Peas	22.80	15.41	17.15
Vetch	16.65	15.65	16.64
Rape	14.35	13.40	16.80
Check	22.39	15.80	17.80
Oats	14.50	13.37	15.63
Corn	16.93	16.38	16.63
Rye	15.78	12.38	16.02
Buckwheat	15.52	13.70	15.19

Table II shows the relative amounts of moisture in the various plots for the dates given. The effect of the rapidly growing crops on the moisture content of the soil is clearly shown. This effect continued up until frosts came, when they were gradually reversed, owing to the mulching effect of the crops that fell down on the soil. Those crops that had made the largest growth and removed the largest amount of moisture during the growing season, now retain the most. This condition continues until the crops that lived through the winter start into growth, when these again begin to remove large quantities of moisture from the soil.

TABLE III.

Effect of Growing Crops in Springtime on Soil Moisture.

Percentage Moisture Present For Dates Indicated.

	1904 April 15	1905 May 15
	Per cent.	Per cent.
Cow Peas	10.99	18.79
Field Peas	11.45	18.92
Vetch	10.64	14.50
Rape	11.65	21.57
Check	10.72	18.54
Oats	12.39	....
Corn	12.05	23.08
Rye	9.98	18.06
Buckwheat	12.17	19.39

It goes without saying that the loss of moisture from the soil at the beginning of the growing season may be very injurious, and that such crops should be plowed under and cultivation begun as early as possible.

Table III shows the effect of these crops for the dates given. Of course, this is much later than they should be allowed to grow in practice.

All the figures in the tables herein given are the average of the first and second foot of soil. These determinations were always made separately and invariably showed some difference in moisture content between the two depths. However, it was impossible to detect any constant differences that were traceable to the cover crops directly. The effects heretofore mentioned were nearly always evident in the surface foot first, then in due time transmitted to the second.

TEMPERATURE.

The observations of the temperature of the soil in the various plots perhaps proved the most instructive, because very little similar work has been done and none, so far as I know, so extensively carried out. The mean daily temperature as well as the weather conditions at the exact time of taking the soil temperature were noted. Owing to delay in securing temperature coils, they were not placed in position until October 8, 1904. No direct relationship between moisture content and temperature of the soil was evident, except as to depth of freezing, as we shall see later. The driest plots and those with the least protection were the ones that froze deepest.

The second season the coils were placed July 19, but in both seasons the differences in temperature in the various plots were slight during the growing period, but varying always and directly with the weather conditions and the thoroughness of the cover. That is to say, when readings were taken on bright, sunny days the check plot and poorly covered ones always showed the highest temperature, and on cold, cloudy days, the highest temperature.

This simply means that the temperature of the well-covered plots was more uniform and the greater and more sudden the changes in the air temperature, the more marked does this uniformity become. The most striking illustration of the cover crop effects on temperature will be seen in the depth of freezing during the severe cold of winter.

The figures in table IV show clearly the effect of clear and cloudy weather on soil temperature. Those for Januray 11, 1906, show temperature of plots under six inches of snow. The snow disappeared last from oats, corn and buckwheat, in the order named, and in every case those plots showed a uniformly higher temperature while the snow remained on them.

TABLE IV.

Effect of Clear and Cloudy Weather on Soil Temperature.

Temperature (F.) For Dates Indicated.

	Nov. 14 1904	Sept. 12 1905	Jan. 11 1905
	Per cent.	Per cent.	Per cent.
Cow Peas	40.0	61.0	34.0
Field Peas	40.5	62.5	34.0
Vetch	42.5	61.5	34.5
Rape	42.5	61.0	34.5
Check	41.0	64.0	34.0
Oats	42.5	62.0	34.0
Corn	42.5	61.0	34.0
Rye	42.0	62.0	34.0
Buckwheat	41.5	62.0	34.0
M. D. T.	37.0	68.3	28.0

As was said before these differences of temperature in the soil became more marked as the air temperature became more extreme, and the results of the observation on the depth of freezing were perhaps the most striking of the entire experiment, and the differences between the crops were here more pronounced and persistent than in either the moisture determinations or the other temperature readings.

In making these observations, measurements were made in two places for each plot and the average taken. Several measurements were taken at different times and in every case the relative differences were the same for the same crops, the same season. Slight variations were seen for some crops the different years, due to the better growth and better cover produced by some crops one year and the poorer growth and cover produced by others.

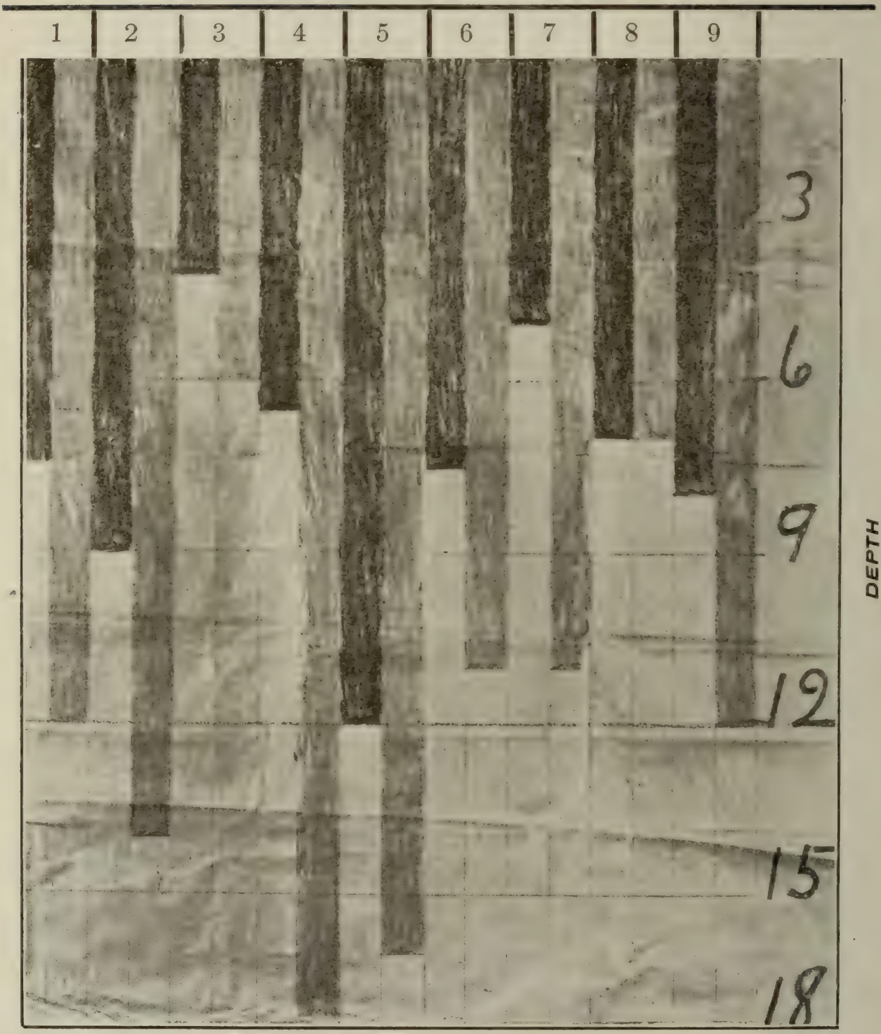
Table V shows the depth of freezing in the various plots, at the coldest period of each winter. The gray color shows depth of freezing for February 12, 1905, and the black for February 10, 1906.

During the first season the rainfall was not large and all the plots went into winter relatively dry. Throughout the entire season of growth, moisture determinations showed rape to be removing the greatest amount of moisture, and when it was killed by frosts, it gave poor protection from further loss by evaporation. This plot was frozen 18 inches deep, which is the greatest depth recorded.

The difference between the rape plot and the check plot, which was frozen to a depth of 16 inches, is probably due to the drying effect of rape. Field peas give the next greatest depth of freezing, and it will be remembered that this crop was killed early in the season, leaving very little cover. Both oats and corn made a good growth and cover and the soil under them in each case has frozen to a depth of 10 inches. Rye made an extremely dense, close stand

TABLE V.

DEPTH OF FREEZING.



and good growth, and the soil froze only to a depth of 8 inches. The vetch made a good growth, covering the soil with a dense matting of vegetation, which gave by far the best protection from freezing, the depth here being only 6 inches, or just one foot less than the deepest.

In the observations of February 10, 1906, a number of differences are noted not in keeping with those of February 12, 1905, but these are easily explained. The copious rains in the fall kept the moisture content high in all plots. The check plot is frozen deepest (12 inches). The field peas were again destroyed and this plot gave the next deepest freezing (9 inches). Oats and rye both made a very poor growth and cover, and consequently have frozen to greater relative depths than for the previous year. Corn made a much better growth and replaced rye in second place. Vetch made a similar growth and the soil froze only 4 inches deep, which is again the best showing for the year.

No one will gainsay that the differences here shown may frequently make all the difference between serious injury or perfect protection.

CONCLUSIONS.

There are some general conclusions that may be drawn in regard to the relative value of different crops for cover crop purposes.

(1). Any crop intended for this purpose must be sown early enough to make a heavy growth before killed by frosts, and, other things being equal, the heavier the growth the greater the check to the trees and the greater the protection during the winter.

(2). The value of a crop for this purpose depends on the season. One crop may be excellent one season and utterly worthless another.

(3). Some crops, as rape, cow peas and soy beans, are rapid growers, but after frosts come, have little mulching effect and consequently give little winter protection.

(4). Some crops hold snow, leaves, etc., better than others, and in so far as they do, give just that much more added protection. In some localities cover crops should be selected with this in mind.

(5). Crops living over winter should be plowed under as early as possible, in order to prevent loss of moisture.

(6). Some plants do one thing better than others. None seem to be best in every respect. Corn was superior to all others in its effect on moisture, while vetch was superior so far as its effect on temperature was concerned. These two crops came the nearest being ideal.

(7). The greater the vegetation produced the greater will be the amount to return to the soil for the formation of humus and the bettering of the physical condition of the soil, setting free plant food and increasing the water-holding capacity of the same.

(8). We must carefully study our local conditions and select those crops that will best do those things of most importance for our own conditions and locality.

The President: This matter is now open for discussion.

Mr. Gill: In view of those experiments, what would be the effect of clover which grows pretty well? I mean of course to grow it during the year, and then it would be cut and allowed to mulch during the summer?

Professor Davis: Last winter I began an experiment that ended disastrously in studying moisture conditions and the temperature conditions under mulch and compared with the sod in the same orchard and the clean culture plot elsewhere, but very unfortunately my thermometers broke down after two or three readings and they cannot be replaced quickly, and the experiment stopped. So far as the temperature is concerned, under ordinary mulch, two or three inches of manure placed around the trees, as compared with the clean plot, the two or three readings we got, we got as much as five to seven degrees difference in temperature in favor of the mulch. I think there is opportunity for some good work to be done in the determination of the relative effect of moisture on the trees, and also on the temperature. So far as clover is concerned as a cover crop, I think if we could get a good stand of clover the results would compare favorably with a stand of rye, but the difficulty with that, is in getting a good stand of clover at that time of year for cover.

Mr. Gill: Would you say it should be plowed under in the spring instead of allowing it to grow and mow it for a summer cover? Which would bring the better results?

Professor Davis: I do not know. I do not think I could say at the present time. If you did that you would be getting away from the cover crop and going over to the mulch idea. That is an entirely different problem, and I do not think I could discuss it this morning.

Mr. Roudebush: In the light of your experiments what would you say as to oats?

Professor Davis: It compared very favorably the first season when we got a good growth. It was second or third as far as the effect on the moisture was concerned, the corn and the oats being the same so far as its effects on temperature was concerned.

A Member: What time of the year would you sow the oats?

Professor Davis: It depends on the weather conditions. The first year we sowed any oats we got a good crop. We sowed them in August and got a good cover. The next year we sowed them the 19th of July, and did not get any cover to speak of. They were killed by the rust.

A Member: They were sowed too early.

Professor Davis: Probably that, and the heavy rain made rust conditions very satisfactory.

A Member: What cover gave the best results?

Professor Davis: We made observations on that, and I think the rape gave us the best mechanical conditions, better than the rye.

A Member: Isn't rape very exhaustive on the land?

Professor Davis: I do not believe it was.

Mr. Shirer: What was the minimum temperature for 1904-1905?

Professor Davis: For 1905, the winter of 1904-1905, it went down to zero, a little below zero once or twice. That was the year that gave us the deepest freezing. I remember that the average for some ten days in February was 2 degrees and a fraction.

Mr. Shirer: Does it follow that the more moisture there is in the soil the less it will freeze?

Professor Davis: Relatively so, yes.

A Member: If trees have been heavily mulched through the summer and the mulch is all removed during the fall to prevent damage from mice, will it have any particular effect upon the tree as to freezing?

Professor Davis: I should say probably it might, depending upon the severeness of the winter. Without any doubt the soil would freeze deeper without the mulch there than with it. The only question is would it freeze deeper than the roots of the tree?

A Member: The mulch has a tendency to draw the root from the ground. There will be roots, large roots, on the top of the surface.

Professor Davis: Yes, but in a recent bulletin that was gotten out it was shown that while there was some roots next to the surface, there were also more roots in the soil. A great many of the food absorbing roots die each year and are renewed the following spring.

Mr. Pierce: Isn't it difficult to get cover crops to grow in an orchard of any size, in an old orchard?

Professor Davis: It is more difficult in this orchard.

Professor Davis: I think we might conclude from the results that other people have received that it affects the fertility. We have a growing crop on the soil, and a certain amount of plant food soluble, those crops will take it up. The nitrogen salts are easily washed out.

Mr. McCowan: Does cultivation increase the blight?

Professor Davis: I do not know. My own opinion is, not backed with very much experience, that it would tend to increase the blight.

Professor Waid: Do you think that a combination of crops would be good to plant, say planting one first and then another later?

Professor Davis: Yes, that might be possible, and I think in some cases advantageous.

Mr.Shirer: To keep it from washing would it be advisable to sow what would you select? I mean asparagus four feet four, and in case you want to sow a cover crop?

Professor Davis: To answer your question indirectly, I certainly would not want to use any cover crop with good asparagus up to the first of June. Those plants have to make an enormous growth during the remainder of the season which is all too short, to store up plant food in the root, and we do not want to plant anything on that soil that will rob the soil of that food. It would be better to clean them out and make a dust mulch.

Mr. Shirer: To keep it from washing would it be advisable to sow oats, to keep it from fall washing?

Professor Davis: I do not know very much about that. Perhaps Professor Shaw can tell you more about it.

Professor Shaw: In certain varieties, take the peach, the late varieties, you would want to use care in the cover crop, and you shouldn't dare to use one that would take too much moisture out of the soil before the crop was harvested.

A Member: Have there been experiments made looking to the use of alfalfa?

Professor Davis: I would say that since the experiments that were made we have sowed a pear orchard in crimson clover and alfalfa. The alfalfa was not good, but the clover was quite good. So far as the general effect on the orchard was concerned it seems quite good. I know of no reason why alfalfa would not make a cover crop if you can get a good crop in the fall of the year. That is the difficulty with clover and alfalfa.

A Member: What would be the condition in the following spring?

Professor Davis: If you wish to continue the cover crop system you will plow them up and continue it over again. Sow your cover crops the latter part of the season so they will make a growth.

A Member. Did you ever use salt to prevent blight on pears?

Professor Davis: No.

The President: Our next paper is "Horticulture of Ohio."

HORTICULTURE IN OHIO.

PROFFESSOR WILLIAM R. LAZENBY.

Fortunate in geographical position, blessed with a naturally fertile soil and a good topography; with a varied and productive climate, it is not surprising that Ohio ranks high in natural resources and in the diversity and extent of her industries.

In the semblance of a square, about 200 miles on a side, between parallels 38° and 42° north latitude, having the Great Lakes on the north and the Ohio river on the south, the highway of nearly all the great railroad systems in the country, her facilities for transportation are excellent and the great commercial centers and markets of the nation are near at hand.

Ohio is equally fortunate in the distribution of her population. With five cities of over 150,000 each and about 40 cities with populations of 10,000 or over, a large majority of her people live in small towns and rural districts. It is a state of small farms. According to the census of 1900 there were 276,719 farms in Ohio, the average size of which is 88 1-2 acres. Only 164 farms contain 1,000 acres or over.

Judged by her mineral and timber resources, Ohio ranks among the richest of the Union and her manufacturers and commerce are varied and extensive. Yet the foundation of Ohio's prosperity are her agriculture and horticulture.

Other industries are useful and necessary and many pursue them with advantage to themselves and others. But many of those industries are less permanent in character, and some of them may yet be entirely dispensed with, while agriculture and horticulture never can be. They are the first and most essential of human pursuits, and it is to everyone's interest that they should be honored and prosperous. Happy is that state or community where they are pursued with satisfaction and profit.

Ohio is noted for her diversified rather than speciailzed horticultural industries. Some states raise more apples and pears, others more peaches and plums, and still others more market garden vegetables; but few states rank higher in the production of all the standard horticultural crops grown in the north temperate zone. The statistics of the twelfth census show that for the year 1899 the total value of all crops in Ohio was $151,226,461. Of this amount, the crops usually classed as horticultural contributed something over 19 per cent., or $28,827,869. Of this amount nearly one-half came from vegetables and one-third from fruits. One striking feature of the horticulture of certain states, notably California and Florida, is its seggregation or specialization. This, together with the fact that the horticultural interests of these states are not overshadowed by the agricultural, makes them characterisically horticultural states. For fruit production alone, California now holds an undisputed claim to first rank, but when we include all the divisions of horticulture, certain states of the East and great Middle West outdistance California. In small fruit culture, market gardening or trucking, vegetable growing under glass, floriculture, the nursery business and seed growing, Ohio takes a high rank. While there are few single areas of great extent devoted to any one of these lines of horticulture, the aggregate of small holdings and the total yield therefrom make an excellent showing.

Magnitude has for many a peculiar fascination. The owner of five acres of orchard often has ravishing dreams of the joy and satisfaction inherent in a great Western fruit farm with its hundreds of acres of fruit trees. As the young captain who can scarcely manage his company in battle would like to command a great army, so many a man with little or no experience in horticulture thinks he can manage a great orchard. I would not, if I could, disparage a great enterprise. There is such a thing as raising fruit on a large scale, and it is good business for those who are qualified for it and have all the means it requires. It is attractive and inspiring to see horticulture successfully practiced on a large area. Some orchard fruits, as well as grapes, are grown on a large scale, with profit. But the great bulk of our apples, pears, peaches, plums, cherries, as well as our small fruits, are grown by the owners of small farms or gardens, and are not likely to be soon grown otherwise in Ohio. One reason for this is that these crops need at particular seasons a personal attention and vigilance that can seldom or never be accorded by the owners or renters of large farms.

Let us rejoice then that there is scope and encouragement for the humble worker in fruit culture; the worker who can achieve large crops and generous profits from small areas and take just pride in that neatness and perfection of culture attainable only in the management of small areas.

Of this, the horticulture of Ohio is a good illustration and it is not likely that large horticultural operations, whether by individuals or corporations, will ever absorb or enable us to dispense with the smaller ones.

Ohio ranks well to the front as an apple producing state. The United States census of 1890 gave her first place, with a crop of over 13 3-4 millions of bushels for the year 1889 and the census of 1900 gave her third place, with a crop of over 20 1-2 millions of bushels for 1899. From the data at my command a conservative estimate of the apple production of Ohio for the ten years from 1895 to 1905, is 120 million bushels, or an average of 12 million bushels a year. Only once during this decade (1899) did the yield fall below five million bushels, while for three times (1895, 1896, 1899) it reached the high mark of over 20 million bushels. The United States census reports for the years 1890 and 1900 give the following data regarding the number of bearing apple trees and yield of apples:

For 1890	No. of bearing trees	Bushels of apples
Whole United States	120,152,795	145,105,689
Ohio	10,860,618	13,789,278
Michigan	8,582,386	13,154,626
Kentucky	5,730,144	10,679,389
Illinois	6,949,336	9,600,785
Indiana	6,089,106	8,784,038
Missouri	8,150,442	8,698,170
New York	14,428,381	8,495,846
Virginia	4,258,364	8,391,425
Pennsylvania	9,097,700	7,552,710
W. Virginia	2,870,535	4,439,978

For 1900		
Whole United States	201,794,764	175,397,626
New York	15,054,832	24,111,257
Pennsylvania	11,774,211	24,060,651
Ohio	12,952,625	20,617,480
Virginia	8,100,025	9,635,982
Illinois	13,430,006	9,178,150
Michigan	8,624,593	8,931,569
Indiana	8,624,593	8,620,278
W. Virginia	5,441,112	7,495,745
Missouri	20,040,399	6,496,436
Kentucky	8,757,238	6,053,717

In spite of the large annual average production, there are comparatively few large or well known apple orchards in Ohio. The following table will give a fairly comprehensive idea of their number and size.

COMMERCIAL APPLE ORCHARDS IN OHIO.

10 acres	50
10 to 20 acres	34
20 to 40 acres	25
40 to 50 acres	17
50 to 75 acres	9
75 to 100 acres	4
100 to 150 acres	2
Over 150 acres	1

This shows that there are about 142 apple orchards in Ohio of from about 10 to 150 acres and that the average size is not far from 30 acres. A conservative estimate of the number of really commercial apple orchards containing five acres or upwards is 250. These 250 orchards will probably average 20 acres each, and this gives us only 5,000 acres of apples.

As a maximum yield is at least 20,000,000 bushels, it shows at a glance that much of this great aggregate comes from the still smaller plantings of the farmer, gardener and suburbanite.

One of the most characteristic single features of the rural life of Ohio, and the same is true of many other states of the East and Central West, are the fruit trees which so generally diversify every small as well as larger farm throughout the state and are also met with on the town lots of the mechanics and workmen in every village and in the suburbs and outskirts of every city. The average Ohio homestead, with its apple orchard and its clusters of pear, cherry and plum trees, not to mention its grape vines, surrounding the house and dotting or belting the garden, give an air of comfort and hospitality rarely seen elsewhere and nowhere else seen fairly equalled. I believe that our country north of the Potomac and Ohio rivers is better supplied with wholesome, palatable tree fruits than any other portion of the earth's surface of equal or nearly equal area. In value of total orchard products, Ohio, according to the United States census, held third rank in 1850, second in 1860, second in 1870, third in 1880 and fourth in 1900; 1890 is omitted, for the value of orchard products is not given in the census report of that year. New York held first rank in 1850, 1860, 1870 and 1880 and second rank in 1900. Pennsylvania second rank in 1850, third rank in 1860, second in 1880, third in 1870 and third in 1900. Michigan sixth rank in 1850 and 1860, fifth in 1870 and 1880 and sixth in 1900. California twenty-seventh rank in 1850, tenth in 1860, eighth in 1870, seventh in 1880 and first in 1900—a position that California is likely to keep for several years, but which I look to see superseded by some of the great apple producing states of the Middle West in the not distant future . The aggregate fruit crop of the five states: California, New York, Pennsylvania, Ohio and Michigan, was 52.3 per cent. of the total fruit crop of the country for 1899.

Next to the apple the peach is the most valuable orchard fruit in Ohio, but the conditions of successful peach culture are not wholly favorable except along the shore of Lake Erie and the adjacent islands. In some of the southern and southeastern counties of the state large areas of peaches have been planted, but the crop is precarious. and many growers are discouraged. Some years the crop aggregates about 3,000,000 bushels, but it usually falls short of this. It can be laid down as a general proposition that the finer peaches, plums, cherries and grapes are grown with difficulty north of the 40th degree of latitude, except in a few specially favored localities, whereof the southern shore of Lake Erie is the most noted, though the west coast of Lake Michigan and a part of the southern shore of Lake Ontario are likewise famous. It is possible to grow peaches, plums and cherries, not to mention grapes, outside of the climate most congenial to them, but it is a work wherein one is likely to pay dearly for his success and often have his hopes utterly disappointed. There are few large orchards of pear, plum or cherry in Ohio, although now and then one of commercial importance is met with. One cherry orchard of 75 acres and others of less size have been planted near Clyde, in Sandusky county, and this is perhaps the most important cherry area in the state. The marked increase in the pear culture during the past fifteen years by the general introduction of the Kieffer is mainly in the southern counties, although a few of the northern counties have increased their area to a marked degree. The grape occupies a large place in Buckeye pomology. In the production of native grapes Ohio ranks next to New York; but the industry is mainly confined to the grape belt of the southern shore of Lake Erie.

The five counties of Cuyahoga, Erie, Lake, Ottawa and Lorain produce four-fifths of all the grapes grown in the state and this is due to the amelioration of the local climate by Lake Erie. The greater portion of the grapes grown are made into wine, which sometimes amounts to 2,000,000 gallons a year. Sixty million pounds of grapes represent a full crop, while the maximum yield has been estimated at 80 million pounds. The small fruit interests of Ohio are large, but there are few reliable statistics. Strawberries undoubtedly lead both in area and yield, and then follow blackberries, black raspberries, red raspberries, currants and gooseberries in the order named. Some years ago strawberry culture attained a large acreage in Belmont county, in the eastern part of the state, and the berries were largely shipped to Pittsburg and Chicago. The black raspberries were also grown largely in various sections of the Miami valley, but these areas have declined and the shipping trade in the small fruits has fallen off. The total acreage of small plantations for home market has increased and the aggregate production in the state is probably larger than before. Following the subject of the fruits proper it will not be out of place to briefly mention the nursery interests of Ohio. The state nursery and orchards inspector reported for the year 1905 a total of 481 nurseries. In keeping with the general character of the horticulture of the state this business is done by a large number of firms or companies working on small areas. For example, counting not the area of land owned or rented by nurserymen, but the area of actual stock, it is found that of nurseries:

From 5 acres to 10 acres there are	186
From 10 acres to 15 acres there are	87
From 15 acres to 25 acres there are	52
From 25 acres to 50 acres there are	15
From 50 acres to 75 acres there are	10
From 75 acres to 100 acres there are	8
From 100 acres to 200 acres there are	3
From 200 acres to 500 acres there are	2
Over 500 acres	1

Market gardening and truck farming are largely practiced to meet local demands, and certain special garden crops are more or less centralized and grown for export. Radishes, early tomatoes and cucumbers are grown in the southern counties of the state for northern markets, and large plantations of celery and onions are grown in some of the north central counties. Numerous muck swamps and the beds of former shallow lakes have been reclaimed and adapted to these and a few other crops. In one county (Ross), where soil and climate seem favorable, the growing of onion sets has become a well specialized industry.

The winter forcing of vegetables is becoming a general practice in nearly all the cities of the state and has assumed unusual proportions near Cleveland, Toledo and Ashtabula, where single growers have from five to ten or more acres under glass. Lettuce is the leading greenhouse crop, but radishes, tomatoes, cucumber, mushrooms and a few other crops are often grown.

Floriculture is practiced in all parts of the state and many large establishments for the growth of cut flowers, and others for bedding plants and ornamental varieties generally, are found. Some of the best known centers of floriculture are Cleveland, Springfied, Dayton, Columbus and Painesville. In this epitome of the fruit interest of Ohio I shall not fail to mention the varieties most largely planted for market. From the best data at hand I may say that the following varieties of apples take the lead by number of trees planted: Rome Beauty Ben Davis, Baldwin and Grimes' Golden. Other varieties very generally planted, contributing a large part to the more recently planted commercial orchards, are Smith Cider, Yellow Transparent, York Imperial, Hubbardston, Red Astrackan and Mann. Many other varieties are being planted in special localities and for special purposes especially for home use, but those named seem to have the call for the whole state for commercial planting at this time. For fillers, or for coming into early bearing, the Wealthy, Duchess, Jonathan, Strawberry and Maiden Blush are very generally used.

Of the other more important fruits, the following are among the most largely planted varieties of each for commercial purposes:

Pears—Kieffer Bartlett and Duchesse.
Plums (Native)—Red June, Burbank and Abundance.
Plums (European)—Lombard, Damson, German Prune.
Peaches—Elberta and Mt. Rose.
Grapes—Concord, Worden, Catawba, Delaware and Niagara.

In Ohio, as well as elsewhere, whenever you urge the superior advantages of fruit culture as a vocation, you are met by the objection that fruit culture doesn't pay. If this is true, it is a serious and valid objection. But is it true?

I think we will all admit that poor crops, whether from field or orchard, don't pay; that shiftless, indifferent work in horticulture doesn't pay; that it is sometimes slow work to make a decided headway in the face of blights and insects, frosts and drouths, though one has done his best to achieve, and really deserves success. Yet I insist, as a general proposition, speaking for Ohio at least, that *good fruit culture does pay;* that few vocations afford as good a prospect or as full an assurance of reward for intelligent, painstaking, persistent labor as this does.

The general fundamental facts or principles on which I base this assertion are these:

I. It is rarely impracticable to grow good crops of fruit if you have made a wise selection of varieties and are willing to work for them. The time and means squandered in trying to raise fruit, where only half crops, or quarter crops, or no crops can be made, is the heaviest item on the wrong side of a fruit grower's balance sheet.

II. The second truth is this: Good fruit crops, good in quality as well as in quantity, rarely fail to yield a profit to the grower. There are exceptions, but they have been few in the past and will be more infrequent in the future. The growing demands for good fruit and our rapidly improving transportation facilities make this certain.

III. Third, the fairest single test of good fruit culture is a steadily increasing yield. This increase may not be uniform from year to year, for there are risks in fruit culture as well as in other pursuits, yet there is no other judgment of fruit culture so unerring as the general increase or decrease of its aggregate product for a short cycle of years. That orchard or fruit farm that averaged 30 per cent. of a full crop fifteen years ago, 50 per cent. of a full crop ten years ago, and will measure up an average of 75 per cent. for the last five years, has been in good hands.

The adaptation and selection of varieties have been judiciously made, the productiveness of the soil sustained and the care and management wisely bestowed. This is what I mean by good fruit culture. In conclusion, I should not fail to mention various organizations that have been signally useful in promoting the horticultural interest of Ohio. The University, the Experiment Station, the State Board of Agriculture, the state and numerous local horticultural societies have all contributed in various ways to the advancement of the art and science of horticulture. The local horticultural societies with their frequent meetings have accomplished much in developing the faculty of observation and comparison and in cultivating the social amenities of rural life. One of these local societies was organized over 62 years ago, and while it may have lost something of the elasticity and enthusiasm of youth, it is still

healthy and vigorous. Another, 40 years of age, can justly boast of having never missed a monthly meeting during its existence. Such records are stimulating and inspiring, and the locality that is making them can scarcely fail to have a wide awake and progressive horticulture.

Mr. Keller: Madison County is not regarded as a fruit country. Corn and wheat and hogs are our staples, but we do, those of us that persist, raise a good many good apples and peaches and plums and pears and some cherries, but at the same time during the year there is a great deal of fruit shipped to our county from southern or northern counties, apples and so forth, and potatoes. We merely grow enough for our immediate use. I am here today to get some hints. I thought this would be an opportunity for learning something. I ask how to fight the insect pest, and I wish we could manage to protect our birds that are such great auxiliaries in caring for the fruit. I know they eat a good deal too, but they are almost indispensable to us and are probably as cheap a means as we could have to take care of our fruit. I saw that evidenced by a trip through the Ozark Mountains where they have young orchards, and where there is a good deal of forest. There is a great opportunity there, and they have beautiful fruit, unscarred and perfect. I was furthermore interested in this subject of mulching.

Mr. Montgomery: The question of paying, as Professor Lazenby has said, I think is the drawback to the horticulture of Ohio, and I was very anxious to bring out from Mr. Gill when they were talking about peaches in Ottawa County, that peaches grew so well, whether the public recognized that fact, and whether it had really advanced the prices of land. Now I understand from Mr. Gill that land there uncultivated, that is, unplanted, but suitable for peach orchard, is worth now over $200 an acre. If that be true, then the public in that community recognizes the value of the peach crop there, as well as in Illinois and Iowa and some other corn districts the people recognize the value of corn, and it raises the price of land. Now I think the reason that in many places horticulture has not been successful is because, as Mr. Knellinger says, the people there have planted the orchards and the berry plantations on soil that was not adapted to the varieties they planted, and that we ought to make a particular study of the varieties, not only at our stations, but at our universities, of the record of the yield of these different varieties. I will illustrate this way. From two trees planted in 1867, I sold over my market stand $52.50, from those two trees. This is an off year, and two years ago, another off year also, I sold from one of those trees $30 worth over my market stand. When we get this kind of variety and know that this variety is adapted to our soil, and that it will withstand these inclement seasons, I think there will be no question then about raising the value and the price of the land per acre. That is the point we want to look for. The State of Ohio will not continue our appropriations for universities or experiment stations or this Society, unless we can go to that legislature and show them that it will really raise the revenues of Ohio, it will raise the price of land.

Mr. Shively: That was my idea when I gave my report for the Sixth District in regard to the varieties of apples that were more successful for that district. It occurs to me that it would be well for each district to make the suggestion to aid those going into the business. We, most of us, look too much to the highly colored pictures and descriptions given by the local agents going through the country. Likely those agents have only had six months' experience in that line, but the farmers are lead to invest in varieties not profitable, and consequently are discouraged.

There is another matter. One of the gentlemen has suggested the importance of keeping our stock out of our orchards. I do not believe we can put enough stress on that. I have come to the point where I allow nothing in the way of stock, not even hogs in my orchard. I prefer to gather up the damaged apples and haul them out of the way than to turn the stock in. Heretofore I have had many trees injured by allowing animals in there that I thought I could trust, but you cannot trust them. That is a matter I think you should take home.

Professor Lazenby: I think we must all concede and recognize that the objects of meetings of this Society are just along the point that these members have spoken of. That is what we are here for. It was not my special purpose this morning to try to show what variety, or what would grow, or what was good orcharding, or good fruit culture. I simply wanted to make the point that good fruit culture does pay; that poor fruit culture, if not well directed, with poor crops, careless management, lack of knowledge regarding it, and the willingness to take the proper care in these things, does not pay and never will pay. But it is the good crops that do pay. Now at the experiment station at the University and in our Horticultural Societies, the object is to get that knowledge. It affords us an opportunity to compare notes along these points, and then I think the propositions laid down are true, that it is not poor crops that pay, and we must get the knowledge necessary to raise the good crops, and if we have the good crops, I believe they are rarely raised except at a profit to the grower.

Mr. Knellinger: One little illustration I would like to give. In planting an orchard I thought I wanted a variety close to the house. There is a big hill there, and I have planted there rows of six varieties, and first I planted ten Maiden Blush. Now I have seen them grow splendidly on trees in that section planted in the right situations. Mine are big enough to bear thirty bushels of apples apiece, and I haven't got off of them ten bushels. I planted next to those five Northern Spies right up the hill, and next to them five Jonathans right alongside, up the hill. Now the lowest Northern Spy—they are now sixteen years old this spring—and the one down to the lowest place next to the road, for two seasons I got three barrels of apples off of that tree each season, and they go down until that upper fifth tree has, I think, never borne an apple. Now with the Jonathan it was exactly the reverse. The apple tree highest up grew good apples. They were fine. But down to the lower part with the Northern Spy, it doesn't grow anything. Now, you see I didn't know. I should have put Jonathans all at the top, and Northern Spies all down at the bottom. Then I would have been successful. It is the same way with orchards all over that country. What we want to do, if we possibly can, is to give the people the elevation, the altitude and the latitude for certain varieties. Then let them judge for themselves.

The President: I think, take it all around, it is the man behind the gun that counts, and what he knows.

Mr. Knellinger: And if he doesn't know, what?

The President: He won't succeed if he doesn't know. He must find it out. Recently I was in New Jersey talking to horticulturists there, and I was driven over some territory near Philadelphia. There was a young man over there. I consider him younger than I am. He owned a good deal of land. When he was a young man he started on his father's farm. I think he bought it of his father, and went in debt for it. That man now owns seven farms and 800 acres of very fine land over there. He grows everything from vegetables to fruit, and Philadelphia is his principal market, and he has paid for that land, and I think he has money besides. He showed me some figures, and I know from what he says that apples are one of his best crops, and he has probably 200 or 300 acres in apples. He makes summer apples a specialty. You must look at your market when you are growing apples. If some of you in the southern part of Ohio have no market, what are you going to grow? Without a market you can't make it a success. But if you have a local market, you can grow summer apples, and make good money. With no local market you have got to ship if you can. A man must study all of those conditions in the right light. Of course if you are near Cincinnati or Columbus, you can grow summer apples, and as a general thing the market is better for good summer apples than for anything else. There are plenty of common apples nearly every year, but you don't always find good summer apples. If you are going to grow apples be careful to cull out your apples. Get rid of your culls. Put your apples up in attractive packages, and put them on the market in an attractive way. Get acquainted with the people that are your customers, and they will go into the market, and want your goods, and they will pay a good price for them, and you will be proud of them.

A Member: What do you think of the Yellow Transparent for an early apple?

The President: Good.

A Member: What do you think of the Red Astrakan?

The President: I do not think it is as good as the Yellow Transparent.

A Member: Would you recommend it to ship?

The President: I would say grow better apples instead, although I am not an authority on it.

Mr. Montgomery: Do all varieties do equally well with you down in Southern Ohio?

The President: No, some varieties are better than others. A man should have a number of varieties, so that he can keep a wagon going from summer to fall.

Mr. Montgomery: You think that a man should grow what the people want?

The President: I would say grow better apples instead of the cheaper varieties. Where the people do not know what are the best they should be educated up to it.

Mr. Montgomery: In our market no apple is as good as the Northern Spy, but you can't grow it.

The President: No.

A Member: You say grow better apples.

The President: I mean grow apples of better variety. You can educate people in the smaller markets. Of course you couldn't do it in a market like Chicago.

A Member: You claim you can grow several varieties on the same soil with equal success?

The President: Yes, sir.

A Member: Can you succeed with Grimes' Golden on sandy soil?

The President: I think so.

Mr. Shively: My experience with the Yellow Transparent is that if it is properly located, and if it has the proper soil and the proper location for the Yellow Transparent you can plant it with safety, but don't plant too many. It is a good deal like a strawberry. You will find it a marketable apple. It is necessary to follow it up every two or three days and take off such apples as will stand shipment. Last year, or two years ago, I shipped over 600 baskets. Under the buyer's own suggestion we put them in bushel baskets with slat covers, and he tells me those apples came into Columbus in good condition. Of course it was only fifty miles away, and the traction facilities were good, and they were handled carefully, but they came through in good condition. On land that originally gave us but $13 an acre with a young orchard planted, our net proceeds a year ago realized $100 a year actual figures, not counting the cost of spraying and all of that. But as I said before, don't plant too many, and consider the market resources that you have before you venture. If the conditions are right you will succeed.

Mr. Gill: With reference to Maiden Blush, I have one tree, and that grows on black land. In our township we don't have to consider the north side and the south side, because there there are just two sides, upper and lower. [Laughter.] I have one Maiden Blush, and it bears abundantly with beautiful apples.

Mr. Courtwright: I think one mistake is made. I think we should recommend certain varieties for certain localities. We all know that an apple that does well in Northern Ohio may be poor for Southern Ohio, and I think that this Society should recommend certain varieties for certain localities, and in that way it would help the people to a great extent. The bulk of our apple trees, and all kinds of fruit trees are sold by agents. The farmer is not well acquainted with the apple that does well in his locality. The agent has his colored plates, and he shows them to the farmer, and the farmer chooses the variety. It may be an apple unfitted for that locality. He buys quite a number and fails. His time and money are gone, and it is a detriment to horticulture, as well as to the party that buys those trees. I think this Society should appoint a committee to make selections for the different localities in the State of Ohio, especially for apples, because I think there is more difference in the selection of apples for the different localities in Ohio perhaps than any other fruit grown.

The Secretary: I think most of you who have been reading our reports remember that several times in the last few years lists have been published, and I have now a list partly made out, and I have corresponded with some of the growers, and shall be pleased to correspond with more of them, and I want to receive lists and statistics from all parts of the State. In the matter of peaches, pears and plums and small fruit, there are smaller variations in the different parts of the State. The variation is due to the conditions of soil, and climate. But the question of variety is one that is very important. It is one of the foundation stones of success or failure. I wish to repeat again that I hope to receive lists from as many as will send them in from the different parts of the State.

Mr. Moore: I want to make a little statement in regard to the orchard of Mr. Knellinger. I have been watching that for seventeen or eighteen years. It is largely a Grimes' Golden, Ben Davis and Rome Beauty orchard. Those are his three leading varieties. I have seen him have some very fine apples of other varieties. He has very fine Jonathans, too. Another apple that we have overlooked. I do not know how it does in all parts of the State, an apple I think a great deal of, and that is the Stark. I do not know how it will do, but I had a great deal rather eat it than Rome Beauty or Ben Davis. It hasn't got the color that will sell it like the Rome Beauty, but if you were to set a bushel of each down side by side I would take the Stark in preference to either of the others every time. It is a good deal better.

A Member: What kind of soil do you have it on?

Mr. Moore: The trees we have—we have only a few trees—one stands on a north hillside, which is a standstone soil, and the other two are on what we would call a limestone soil. One is on the extreme of the north hillside, the other two are on the summit which is a limestone soil underlaid with limestone down, say 15 or 20 feet.

Mr. Montgomery: You aren't recommending the Stark as a variety for commercial growers, are you?

Mr. Moore: I would grow it.

Mr. Montgomery: You couldn't sell it.

Mr. Moore: Why not?

Mr. Montgomery: It looks bad.

Mr. Moore: That doesn't make any difference about the looks. An ugly cow will sometimes make a good milker.

A Member: But you don't sell the cow. You sell the butter.

Mr. Moore: That may be true, but if you are going to eat them they are very good.

Mr. Montgomery: But I am not going to eat them. I want to sell them.

A Member: The Stark as we grow it is subject to having a spot in the apple. Why is that?

The Secretary: I had a nice block of Stark, and some ten years ago I had one tree that was bearing in my orchard, and I didn't consider it very good, and I grafted many of them over to Sutton Beauty, and I made a mistake. The trees that I have bearing of Stark are paying about as well as any I have, and I found that when I took them to market after a while, the groceryman called for them, and the people called for them. I think it is colored enough to be salable, and its quality is far in admarkets. The only objection I have found to the tree is that it is quite a large tree, and it is somewhat difficult to spray. You have got to be careful in keeping them thinned out, both the tree and the branches. Unless it has been carefully grown, as has been said here, their appearance is not good.

A Member: Are they good bearers?

The Secretary: They are as good as the Baldwin, and sell equally as well. This of course may not be so with all markets. They are not red with us, but they are bronze in color. When they are well colored they are good. I recommend them, however, with caution.

Mr. Shively: There is a firm down here that has planted them. Their plantation is on a hillside, and they tell me they realize more money out of that apple than out of anything else they have in the orchard. I have watched the orchard, The trees do not grow large, but are of a dwarfish nature on that soil. They have recommended them very largely, and I have planted a few.

Mr. Courtwright: The Stark, I think, is one of the best apples for Central Ohio that we have. It is an apple that from my limited experience, is not so particular in regard to the soil it is grown on. It will grow on almost any poor soil, and it is one of the most productive that we have. As far as the selling part is concerned, I find that the Sutton Brothers here will take it at a good price, as much as they will pay for any other variety. While it is not colored up as well as some others I think it is colored enough to be salable and its quality is far in advance of the Ben Davis, I think.

Mr. Pierce: I have had 15 of the Stark apple trees in bearing for twenty years or more, and it is the only apple I can grow that approaches in productiveness the Baldwin, and where it is grown far enough apart that it gets plenty of sunshine, it is fairly well colored. I have had some well colored apples. I have had some trouble in selling it, but I do not sell it the first thing in the fall, but usually keep it until sometime in February. I put 80 bushels in storage last year, and took them out in the last part of February. I took out 68 barrels from the bin. I think that is a good showing without cold storage, and they will sell if you keep them until February.

Mr. Moore: How do you compare the quality with the Rome Beauty. [Laughter.]

Mr. Pierce: I do not raise the Rome Beauty, but I consider the Stark a good deal better quality than most apples, better than the Rome Beauty, or the Ben Davis either, of better quality. I know of a good many people that prefer it to the Baldwin for eating.

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7 O'clock p. m., January 16, 1908.

The meeting was called to order by the President in the auditorium of the Board of Trade Building.

The President: While we are waiting for the others to come, has anyone any question that they wish to ask out of this list on the program? Perhaps Mr. Montgomery will answer question No. 16, "What are the best crops to grow in young orchards?"

Mr. Montgomery: It has always been my idea, Mr. Chairman and friends, that in a young orchard the crop grown there should be what we call a low growing crop, like potatoes, something that would not grow as high as the trees, and that these crops should not be planted very close to the trees in order that they might not rob the trees of moisture, and yet sometimes we get knocked out in our theories. For instance, in 1905 on my road to market I saw where some parties bought a tract of land, and on that tract they set out an orchard of about two and one-half acres, and then put an acre in the house yard—they planned where the house was to be, and then they set out shade trees and ornamental plants. They bought this land in the winter, and it was already sowed to rye. In the springtime they set these trees right in that rye field. I had always thought that this was quite dangerous, to have a high growing crop like that growing in a young orchard, and I thought now we will see how it will come out. They will lose all of those trees. Well, 1905 happened to have a good deal of rainfall, a good deal of moisture, and that was a tremendous crop of rye. It grew up very high, so that you could not see the trees at all, and I thought that when the rye was cut off they would find the trees dead. Yet to my surprise that rye was cut off—and it made a very good crop—I forget how many bushels to the acre, but it was the biggest yield of any crop in that country, and yet the trees came out all right, and they are living. But I think that was on account of the season. There was so much moisture, and especially about the time the rye was beginning to ripen, when it was drawing heavily on the ground. Although in that instance they came through all right I would not recommend that practice at all, the growing of corn or wheat or oats or rye or any tall crop. In my own practice I have grown nearly altogether the low growing crops. But when you grow these crops in between the trees, you want to get something out of it, and that depends upon what you can market to advantage, and it depends on whether the soil is adapted to these crops that you have a market for. And yet you can change that a little bit. The only crop I want to grow, aside from the cover crops, are potatoes and melons, and of course a lot of land is not adapted to either of those plants, and especially the melons.

A Member: How about beans?

Mr. Montgomery: That is a good crop. The white bean can be planted late in the year, and I think can answer somewhat as a cover. It is a leguminous plant, and I shouldn't wonder if it were all right. I have not practiced it. I have been thinking of it. A gentleman in our country is growing white beans, not in his orchard, but I shouldn't be surprised if that would be a good crop to grow. Now about potatoes. Some of my land is on a hillside and some of it is heavy clay, and some has stones in it, and that is not adapted to potatoes, but it is surprising what beautiful potatoes I can grow on this hillside by covering them with straw. The straw keeps the soil moist and loose, so that the potatoes can develop symmetrically at all points, and then if it happens to be a little deficient in plant food, you can put on commercial fertilizer, and bring up the fertility in that way. Of course you could not say to everybody that this is the crop to grow, because everybody might not have a market for potatoes and melons, but I do. From my experience, that is about the crop I would like to grow in a young orchard, potatoes and melons, and where the soil is adapted to that, and you have straw to use for mulch, it is surprising what potatoes you can grow on hilly, stony land, where you couldn't grow them otherwise.

A Member: Did you ever see any bad effects from growing corn in those places?

Mr. Montgomery: No, I haven't grown corn. My idea is that if the corn was too close to the trees it would shut off the sunlight.

A Member: That is the idea, but I never saw corn hurt them.

Mr. Montgomery: Well, that may be true. You know I told you about the rye.

A Member: Was that land cultivated after the rye was cut off?

Mr. Montgomery: No, it was sown to grass seed. Timothy was sown in the fall, and in the spring the orchard was set out, and it was sown to clover, and it has never been cultivated since. It has since been a meadow. It was a surprise, but see the season we had. You know last year they had a great grass crop. I think if it had been a dry season it would have been very disastrous.

A Member: There was no mulch whatever?

Mr. Montgomery: No, sir, no mulch whatever.

Mr. Shively: I would like to ask Mr. Montgomery in regard to tomatoes. In our country we have a canning factory, and they are trying to get a large acreage, and I should like to know if there is any bad effects from growing tomatoes?

Mr. Montgomery: I have had no experience in regard to that.

A Member: How much would it cost to mulch an acre of potatoes where you have to pay $7 or $8 a ton for straw?

Mr. Montgomery: I can buy straw much cheaper.

A Member: It takes two tons an acre?

Mr. Montgomery: More than that, four or five.

A Member: You put it on thick?

Mr. Montgomery: Yes, sir. I keep the weeds down with it. I have to buy most of my straw. Sometimes if the straw is high I put it on thin, and then I have to do some pulling of weeds by hand.

A Member: Straw is $8 a ton in our country in the stack after harvest.

The President: We will now have question No. 3 answered by Mr. Shively, "Shall we use fillers in orcharding, and if so, of what should they consist?"

Mr. Shively: It depends largely upon the location, situation, conditions, and so forth. I have never been very favorable to growing fillers in an orchard. I have never seen any good results, but in our section in orchards that were planted years ago, as a great many were, forty feet apart, fillers in the way of the small growing trees could be used. For instance, Transparent; you know that is a dwarf, and I think that could be planted in safety. I believe I would not encourage the planting in of trees of any kind for fillers unless it had been tried before. The peach has been used, but in our section of the country we have come to the conclusion that peaches are a lost question with us as to profit, and I would not advise the planting of peaches. There are many difficulties to encounter in putting in these fillers, and therefore as far as my own experience has gone I would not advocate it. There are many difficulties to encounter in having these fillers in the way.

A Member: My purpose in raising fillers is to protect my apple trees. I have tried to get something that will grow quickly, and I have selected pears and plums to protect the apple trees from wind, and I thought it paid me well in that way.

Mr. Peterson: I have peach trees as fillers in a small orchard that I have of about ten acres, and they are about ten years old this coming spring, and three years ago the peach crop sold for $450. I can see no injury to the trees. We have cut them back. Two other peach crops brought me a good deal of money.

Mr. Knellinger: My experience is that the peach trees infest the apple trees with insects.

The President: I might add that I think the worst objection to it is that the bordeaux mixture and arsenates will take the leaves from the peach trees every time, and there is no use to grow peaches in orchards if you are going to spray.

Mr. Peterson: We sprayed three times, and I do not think we lost a leaf, and we sprayed with bordeaux and arsenate.

The President: You surely didn't touch a leaf, then.

Mr. Peterson: Perhaps we didn't.

The President: I can't do it that way. I know it blows over onto the other trees.

Mr. Shively: Mr. Cox doesn't have to resort to fillers, because he has plenty of available land. Many of us are in that condition. We have plenty of land. One drawback in many orchards in connection with the growing of trees is that we are endeavoring to get too many crops, and thereby we are doing an injustice to both crops.

Mr. Roudebush: The peach is exhausting to the soil compared with the apple, and you cannot afford to do it because of that proposition.

A Member: What strength did you make your bordeaux for peaches?

The President: Will Mr. William Miller answer that?

Wm. Miller: Not over half, and not quite that. Two pounds to fifty gallons is, if anything, too strong for the peach leaves.

The Secretary: We used one and one-half pounds to fifty gallons, and it destroyed part of the leaves, but not enough to injure the crop. It probably helped the crop. One and one-half pounds of blue stone to fifty gallons of water.

A Member: What proportion of lead?

The Secretary: We used no lead at that time. We were simply spraying for black spot.

The President: Did it take off part of the leaves?

The Secretary: Part of them, but not until sometime afterwards.

Professor Selby: With regard to spraying peaches, I think Mr. Miller has stated the matter correctly. I would not have the gentlemen here get the impression that it is unsafe to spray peach trees with bordeaux mixture, and let them stand in the way of protecting Salway from the scab. You can do it successfully. It is wise to reduce the strength in the neighborhood of one and one-half to two pounds. I take it that if we had arsenate it would enhance the difficulty, but if we are to grow the latest kinds of peaches and bring them to proper maturity in wet seasons I think it will be found profitable for varieties like Salway, or even some of the other varieties.

The President: Perhaps Mr. Bassett of Michigan, can tell us something about spraying peach trees.

Mr. Bassett: It has been practiced to some extent, but with little success. It is one of the important subjects we are working on. In the use of one and one-half pounds it was found to be so strong that unless you use a large amount of lime, and even then we lost a considerable amount of foliage. The control of that black spot or brown spot is most important, but we have never been able to solve it as yet. We are looking now to some other methods of controlling it, but that is not by spraying. We are going to keep on spraying, but it is a delicate thing to spray a peach tree during the growing season. As I said before, the control of the black spot, mycelium is the scientific name, I think, is most important.

The President: The first paper on the program tonight is "The Use of Flowering Shrubs in Beautifying a Country Home," by Mr. W. E. Bontrager of Wooster, Ohio.

THE USE OF FLOWERING SHRUBS IN BEAUTIFYING A COUNTRY HOME.

BY W. EMERSON BONTRAGER.

The existence of a desire to improve and beautify the country home is abundantly shown by the attempts at planting to be seen on every side, however unsatisfactory and even crude these may sometimes appear to the scrutiny of the experienced and critical planter. Rare indeed are the homes where no attempt whatever at ornamentation has been made. The planting may, and generally does, consist of a few specimens of maple, elm, locust or Carolina poplar, with the addition of sundry clumps of lilac, mock orange, sweet-scented shrub or roses; the entire collection enriched and diversified by the presence of an occasional white pine, Norway spruce or arbor vitae. Usually a dash of color, such as is furnished by the use of geranium, petunia or other bedding plants, is also in evidence. Or the farmer's home may be devoid of all ornamention save that afforded by gnarled, antiquated apple or other fruit trees. While these attempts may appear imperfect or pathetic, they must be accepted as evidence of a healthful desire on the part of the rural resident to increase the attractiveness of his place of abode—a desire which needs only to be educated to speedily bring about the complete transformation of many country homes.

The objection to the landscape effects about most rural homes is not due so much to the lack of planting as to the absence of any apparent design or plan in the disposition of material. Many a fine lawn has been ruined by the indiscriminate, haphazard scattering and mixing of trees and shrubs. The appearance of a home and its surroundings, when improved with some regard to the rules and principles which govern all really meritorious planting, should impress and appeal to the beholder as does a painting. The lawn is the canvas upon which the home becomes the centerpiece of the picture. The planter is the artist, and trees, shrubs, plants and vines are pigments which respond to his touch as do the brush and colors to that of the painter. As blotches of color cast at random upon a canvas are chaotic and meaningless, so equally vexatious and irritating are trees, shrubs and plants when mingled and intermixed without any motive or design having been formed previously in the mind of the planter. When the material is tastefully grouped or massed at appropriate spots on the lawn, about open, unplanted areas of grass, the effect is natural pleasing and restful.

Next to deciduous trees, which are indispensable on account of the refreshing shade furnished by them, the permanent character of the flowering shrubs seems to meet the needs of the average home improver, upon whom devolves the planting as well as the subsequent cultivation and care of his grounds, more effectively and satisfactorily than does any other sort of material. While beds of flowering annuals or tender perennials are showy and pleasing, they are transitory and involve a large item of care, hence the chief reliance should not be placed upon them. Indeed, the amount of attention requisite for their successful culture is so great as to wholly preclude their extensive use upon the lawn of the average Ohio farmer, whose time for ornamental gardening is limited at best, and can least conveniently be spared at the season when the demands of bedding plants for attention are most urgent. On the contrary, the flowering shrubs, once a planting of standard kinds has been made, will live and thrive for a long period of years without renewal, demanding at most a small amount of annual pruning and an occasional mulching with leaves or grass. Nothing is better for producing the delightful rural atmosphere of snugness and coziness, while in grounds of very small size they are almost the only kind of material admissible. On the spacious grounds of the Experiment Station nothing contributes so much to the enrichment of landscape effects as do the large masses of lilac, snowball, spirea and other shrubs.

To realize the full artistic value of shrubs they must be seen growing in masses or large groups rather than as isolated specimens. Each shrub is valuable only as it forms a part of a mass, in the form and dimensions of which we discern a part of some comprehensible design. Some authorities consider shrub masses as belonging to either of two kinds: (1.) The mass which embraces a number of different varieties or species, on which it is possible to have bloom from April through all of the summer and fall months to the advent of killing frosts; and (2), the mass which is composed of a single species or variety. The first style of massing seems suited to small yards, since by its use it is possible to assemble a considerable number of kinds upon a limited area, as well as to extend the blooming period over an entire season. Such a mass will afford opportunity for the study, comparison and enjoyment of varieties, and, if these do not differ too greatly in size and habit of growth, the group may be one of much artistic excellence. By employing the second style of massing, in which we find the mass composed of many plants of a single species or variety, it is possible to produce, for a shorter period of inflorescence, color effects of the greatest possible richness, while the mass of foliage itself is a source of satisfaction throughout the season. This manner of planting is most completely exemplified in the finer parks and cemeteries, but the principle is capable of application in the average farm yard, where at least a part of the shrubbery should be so planted as to bring a large group of a single kind into flower at once. While the period of flowering is shorter, the mass of foliage endures throughout the season and we should remember that love for and admiration of foliage shows a keener appreciation of nature and a more refined type of artistic sense than does a liking for color alone. It is hoped that there may be no misunderstanding in regard to the matter of massing. Often a place will be found for a well-grown single specimen of Thunberg's spirea, Lady Stanley althea, high-bush cranberry or other equally desirable species where it would not be possible to use them in larger numbers.

Some of our handsomest flowering shrubs, the hybrid perpetual roses for example, on account of the very fleeting character of their bloom, together with thin, unsatisfactory, mildewed, bug-eaten foliage, are of little value for massing and should be relegated to the flower garden; while the Rugosa rose, whose blooms are less attractive than those of the hybrid perpetual class, has a vigorous, compact habit of growth and luxuriant foliage which make it one of the finest possible things for grouping. The Prairie rose (*Rosa Setigera*) and Multiflora rose are also two good subjects for massing.

Culture.—Let us suppose then, that the home improver has decided to have one or more masses of shrubs. Instead of at once making a hole for each plant, a preferable way is to dig up the entire bed first; if this can be done the fall previously to planting, so much the better. The soil's condition will be greatly improved by the alternate freezing and thawing. In the spring, dig up the entire bed again, making a hole for each bush. Shrubs should be planted so far apart that they will touch after two seasons' growth; from two to five feet being the distances oftenest used.

A certain amount of pruning will be necessary, although more harm than good has been done by misdirected pruning. Shearing or clipping the tips off young growth in order to secure a smooth or rounding surface, can scarcely be condemned in too vigorous terms. This practice increases the number of twigs at the ends of the branches, thus excluding light from the plant's interior as well as diminishing the size of the bloom. Pruning should be done only for the removal of old or diseased branches. In the case of some of the very early flowering sorts, such as spireas, which bear their bloom on the previous year's growth, pruning would best be deferred till after the period of flowering, when a part of the old stems may be removed. With hydrangea, althea and some others whose flowers are produced on new growth, pruning may be done in early spring.

For the first season or two after planting the soil must be kept loose and free from weeds by hoeing. By this time the shrubs will have become thoroughly established, and the cultivation may and should give way to the practice of mulching. The mulch, which may consist of leaves or clippings from the lawn, will keep down weeds, retain moisture and by decomposition will in time increase the fertility of the soil. As the shrubs increase in size their foliage will soon cover the ground, so that the mulch will be concealed and in no wise unsightly.

If it is the aim to secure speedy and lasting results, the planter should limit his selections to ten or even five sorts of acknowledged vigor and adaptability rather than to attempt to grow a hundred or fifty kinds, only to find a number of them unsatisfactory. But the list of really excellent things is so lengthy that species and varieties are not lacking to furnish material for a most varied collection. A single extensive group, such as the viburnums or snowballs, embraces enough species differing in size, habit of growth, foliage, time and duration of blooming and nature of fruit to afford furniture for an extensive lawn. It is a reason for wonder that representatives of this valuable group, containing at least a hundred species, are so seldom found on country lawns. They are plants of good, bushy, compact habit, the majority growing from five to ten feet high, and will thrive on any ordinarily good soil. Perhaps the commonest are the familiar snowball (*Viburnum opulus sterilis*) and the high-bush cranberry (*Vib. opulus*), while the most desirable of the uncommon ones is the Japan snowball (*Vib. plicatum*), a species whose blooms resemble those of the common snowball, but whose foliage is widely different. One of the very handsomest, because of its large, showy foliage, glistening almost as if varnished, is *Viburnum Sieboldi*, a species which attains the stature of a small tree fifteen to twenty feet high. This sort flowers in June, its red seed vessels ripening in August or September. It is one of the very finest, suited by its size to use as a centerpiece for planting in groups of other smaller viburnums. Of a deeper-colored foliage and richer in its fruit is *Viburnum lantana*, a species of possibly less picturesque habit than the preceding one, but valuable for use with other shrubs. When to these are added *Vib. dentatum*, by many considered the best for all-round usefulness, *Vib. tomentosum*, which is the sterile form of Japan snowball, *Vib. prunifolium*, *Vib. lentago*, *Vib. cassinoides*, and maple-leaf viburnum (*acerifolium*), which will stand considerable shade, the possibilities of the group are evident.

The spireas are a good group of early bloomers, also excellent for massing. The bloom is produced in enormous quantities on slender, though tough and strong branches. Probably the best of these is Van Houtte's spirea, of good, vigorous habit and fine, dark green foliage, whose trusses of white bloom are produced in such splendid and riotous profusion as to resemble nothing so much as a bank of snow. This shrub should be of great service in cemetery planting. Thunberg's spirea, one of the many good things that has come to us from Japan, is also a free bloomer, but is perhaps most cherished for its fine, plumy, fern-like foliage, persistent till very late in the season, when the splendor of its autumnal coloring becomes by no means the least of its charms. The best known of the spireas is the familiar old "Bridal Wreath" (*Spirea prunifolia*), whose diminutive blooms are as double as any rose. *Spirea Anthony Waterer*, a variety of more recent introduction than those previously mentioned, is of dwarf, compact habit, and if the first spikes be removed as soon as they fade, the flowering period may be considerably extended. Differing from most spireas in color, its bloom when it opens is a rich shade of crimson, later fading to a rosy pink. A simple, yet effective and beautiful mass can be constructed by alternating *Spirea Anthony Waterer* and *Hydrangea paniculata grandiflora* in a large bed, the result being a mass of bloom from mid-summer till frost.

It is likely that no shrub has been so extensively planted as has the lilac, whose possibilities when used in the mass make it of even greater effectiveness than when grown as a single specimen. Its hardiness and vigorous habit enable it to withstand exceedingly trying conditions, while in the improved varieties we have some with double bloom and a long catalogue of shades, including many handsome dark ones, sometimes accompanied by foliage of extraordinary richness.

The barberries are native shrubs of much worth, their limbs so thickly covered with thorns and spines, concealed by neat foliage, as to present a most formidable front. The American barberry grows wild in the northern and eastern sections of the United States and would be more prized as an ornamental were it less common. It has a tendency to make a long, straggly growth, which can be corrected by severely heading in the new shoots at any desired height. The barberries bear in spring small yellow blooms which are succeeded by highly colored berries that cling tenaciously to the bush through winter. The barberry is one of the very few shrubs whose fruits are not discolored and spoiled by freezing. One of the very best colored shrubs is the purple barberry, retaining its hues remarkably well through the season and valuable as a background or foil to golden foliage. Thunberg's barberry is of dwarf and thick, bushy habit, serving well as a border to groups of either of the preceding kinds or to a group of any kind of larger shrubs. This species is one of the handsomest autumn shrubs, in its rich coloring of reddish-orange, and has no superior for making a low, ornamental hedge, such as a dividing line between the lawn and vegetable garden.

Another excellent group of shrubs, seldom, if ever, seen on country lawns, are the dwarf dogwoods, of which two of the finest are the red-twigged dogwood (*Cornus alba*) and panicled dogwood (*Cornus pàniculata*). The blooms of these are inconspicuous, but for forming a compact, well-rounded mass of neat foliage, five to eight feet high, they are unrivalled, being extensively used for the purpose in all the larger parks. When denuded of foliage, the attractive, wine-colored stems of the red-twigged dogwood serve to illuminate their vicinity during the dull, cheerless months of winter. The dwarf dogwoods are excellent for planting near evergreens.

In the bush honeysuckles (*Lonicera*) we have still another superb group of bushes for use in any scheme of massing. Abundant foliage of good color, a desirable habit of growth, together with deliciously fragrant blossoms that are followed by highly-colored berries are features which unite in the formation of some of the finest flowering shrubs that we have. Where the planter desires to imitate nature as closely as possible in his planting, nothing is better than the bush honeysuckles; stiffness, formality and artificiality being so noticeably absent. Three of the best kinds are *Morrowii*, *Ruprechtiana* and *fragrantissima.*

Well known because of its frequent occurrence in old yards and gardens is the sweet-scented shrub (*Calycanthus*). Its blooms are of a modest chocolate color, exhaling a delicious fragrance that fully compensates for any deficiency in brightness of coloring. But the finest thing about this plant is its heavy mass of rich, dark-colored, glossy leaves. As usually grown there is present but a single specimen whose effectiveness would be greatly increased by using it in larger numbers.

A very large shrub, one which frequently attains the magnitude of a small tree, is the white fringe (*Chionanthus Virginica*). Mention of this may bring to some minds a vision of the purple fringe (*Rhus cotinus*), a by no means uncommon inhabitant of rural and suburban lawns. But the white fringe is entirely distinct, belonging to another order of plants. Its foliage is large and clean-looking, while its dainty, finely cut, fringe-like blossoms make this species, when in flower, one of the most fairy-like trees that can be conceived. The blossoms are followed by a crop of showy purple drupes that resemble small damson plums. This superb shrub is one of the finest things that can be used as a single specimen, although by its size and shape not well suited to massing by itself. However, in a mixed group it can be used successfully with *Calycanthuus*, *Magnolia purpurea* or other shrubs having thick, heavy foliage.

Aside from their value as hedge plants, the privets will serve other purposes on the lawn. While the Calfornia privet is handsome and has been widely disseminated, probably the finest for grouping or massing is the Amoor or Ibota privet, a hardy species which branches freely near the ground. Last winter, plants of California privet growing on the grounds of the Experiment Station at Wooster were killed to the earth, while the Amoor privet went through without an inch of wood being injured. The well-known, old-time privet (*Ligustrum vulgaris*) will stand much shade and grow under the drip of trees.

As has been previously stated, some shrubs appear to better advantage when grown as isolated specimens than when massed or associated too intimately with other material. Such a shrub is the dwarf flowering horse chestnut (*Pavia macrostachya*), which has foliage practically identical with that of the common horse chestnut tree and bears spikes or racemes of effective white flowers, held well above the mass of foliage. Stout, rugged and compact in its fashion of growth, reaching a height of four or five feet, this handsome shrub furnishes a luxuriant, symmetrical mass of excellent leafage and is one of the indispensable things.

So generally cultivated as to need little comment is the hardy hydrangea (*Hydrangea paniculata grandiflora*), yet a shrub of so many sterling qualities merits mention in passing. This shrub flowers in autumn, long after the sheets of color furnished by spring bloomers have vanished from sight. To secure the enormous trusses sometimes seen, the bush should be grown in rich soil and cut off closely to the ground in spring; when the new shoots have made a growth of six or eight inches they should be thinned one-third to one-half. Another good kind is *Hydrangea paniculata*. The new *Hydrangea arborescens grandiflora*, of which one plant has been grown at the Experiment Station the past season, appears to be an acquisition. Blooming six to eight weeks before the common variety, and holding its trusses unfaded for a long time, it helps to bridge over an interval when few shrubs are in flower. Should it prove hardy, it would seem to be of value for the production of cut flowers, if grown in sufficient quantity.

Plants having variegated or highly colored foliage are excellent for massing, although in many instances a single choice specimen is all that can be used safely. For gold, nothing is superior to the golden elder, a specimen or small clump of which brightens its vicinity in a striking manner. To secure the finest possible foliage, grow it in full exposure to the sun and cut the plant back severely each spring. Planted near the purple barberry, purple plum or purple filbert, the result is one of the richest in coloration that can be produced by the use of foliage alone. In the dwarf dogwoods, *Cornus elegantissima* and *Cornus Spaethi*, we have two of the finest variegated shrubs in cultivation. The foliage of *elegantissima* is edged with creamy white, while that of *Spaethi* is bordered with rich yellow, the color of both kinds being well retained even in full exposure to the sun. A good clump of either of these is a treasure on any lawn. In *Althea Meehani*, introduced the past season, we have the unusual combination of handsomely variegated foliage and attractive blooms. The foliage is similar to that of the old variegated althea, irregularly marbled and margined with creamy white, but in the case of the old variety the blooms always failed to open, while in *Meehani* we have beautiful single purplish-red blooms three to four inches in diameter that expand fully.

A list of ten choice shrubs of acknowledged vigor and hardiness consequently adapted to widely differing conditions, might read something like the following: Japan snowball, Van Houtte's spirea, Thunberg's spirea, lilac, bush honeysuckle Morrowii, Thunberg's barberry, red-twigged dogwood (*Cornus alba*), white fringe, Lady Stanley althea, Hydrangea paniculata grandiflora.

In conclusion, I desire to state that we have growing on the lawns of the Experiment Station at Wooster a somewhat extensive assortment of deciduous and evergreen trees, shrubs and hardy perennial plants, to which we are adding the desirable new things as they appear from time to time. We aim to keep the collection correctly labelled and take pleasure in demonstrating our trees and plants to all interested persons who find it convenient to visit the institution in order to examine and study them.

The President: Are there any questions to be asked on this paper? Perhaps Mr. Pierce could add something on this subject.

L. B. Pierce: It would be difficult to add anything to that. That is a very complete paper of itself. There are a few things that might be talked of about it. I judge the gentleman has been getting a lot of new shrubs since I have been there. I have looked over your selections, and there are many points in shrubbery that do not appear until after you have had them planted. There is a large amount of shrubs at the Experiment Station, some large groups and large shrubs in front of the building. I think they are perhaps too large, and it is very evident in looking at those shrubs in midsummer or after, that many should not be there. They are not handsome except when in bloom. I think Mr. Green and I found out a dozen varieties of spireas there, two varieties that had foliage during the summer. One was the old Bridal Wreath, and I forget the other, but both have persistent bright foliage; but all the rest of the spireas are not ornamental.

The Secretary: Van Houtte is good.

Mr. Pierce: Yes, that is pretty good. I think that was the other one. And the same way with the snowballs or viburnum. Some of our native ones are as good as the foreign ones, and valuable both for foliage and flowers. Some good specimens are to be found in the group there at the station. There are many varieties of shrubs. I sometimes think two or three specimens of shrubs, especially in a small place, are more valuable than a good many grouped ones. Hydrangea Paniculata Grandiflora is one that makes a large bush, eight or ten feet in diameter and six or eight feet high, and I know one thirty years old that must have had 700 or 800 blossoms on at one time, and they turned to red, the pods were brown or red and brown finally in the winter, and the foliage is not very good, but the flowers come out, and really in that yard—it is not a very large yard with the house near the road, and this one shrub near the end of the house on the side, makes a pretty ornament all summer, and is very effective.

In regard to the filling, I like the idea of spading up all the ground of a bed you are going to use, whether for peonies or shrubs or anything of that kind. They want the same cultivation that corn does for a while, for two or three years anyway, but it doesn't do any hurt for some of the daffodils, especially some varieties of them, do well amongst shrubbery, and for four or five years peonies will do very well. Set the shrubs five feet apart, and unless you get unwieldy ones that require a lot of freight, and which you do not need (because they grow very rapidly), if you set them five feet apart you will have a lot of bare ground, and I do not like the looks of mulch as much as some kind of filling, and peonies help a good deal; and before the peonies come out of the ground you have daffodils. They have ornamental foliage, you might say, at least it is not disagreeable, and remains green until after midsummer, and then you can plant other things in among the shrubs while they are growing. If you look out not to get too glaring or inharmonious colors in your bed—and that is another point—a group of shrubbery can be planted with several kinds of flowers showing from different sides, and in going around it, or if you have a path that goes to one side, say the path to the well, in your drive from the house, and perhaps a path to the street on the other side, you can get several distinct views by having a group of shrubbery, and planting in the edge of it varieties of flowers. I think one of the finest of flowers I have seen anywhere was a group of dwarf Senna planted near the road. It appeared among plants coming from a ten-cent package of seed, and it was really beautiful. One of the main objects in my mind of planting is to have something to back up your ornamental work again. If you have shrubbery of an ornamental character itself, and then have the color you want to in front of it, you are getting a good deal more out of it than you do with just a single shrub, or with the shrubbery alone. Of course it costs something to furnish these flowers, the labor and first cost of the seeds or plants, but I think it pays, and as I say, you can get several views on different parts of your lawn, one from your house, and one from the street, and one from another point perhaps, when if you didn't have anything there you wouldn't have anything in the way of artistic value. I might talk all night on this subject, but I would like to hear from somebody else.

A Member: Can anybody give me a remedy for rose bugs?

Mr. Pierce: Pick them off. It is not such a job if you don't have too much to pick over, a few vines or bushes or a few shrubs; if you make it a point you can soon get them off, and it is difficult to poison them. There are a lot of things you cannot do by looking at them or talking about them. There is a lot of work about it, and that is why more of it is not done.

Mr. Shively: I would like to ask if you have had any trouble in getting the rhododendrons to grow?

Mr. Pierce: Rhododendrons are very pretty on my place. They will not do well on limestone soil. I know a neighbor of mine who planted some on the north side of his house where he thought it would be a good place for them. He thought it would protect them from the winter snow, but he got them right where the masons made mortar for the cellar for the house, and he tried twice and did not succeed, and I am not sure if Mr. Chamberlain hasn't hit perhaps the same thing. But I have no trouble at all with rhododendrons. I go to Storr & Harrison's nursery to get them, and I get them in the pot. They come from the old country. They are potted plants grown in Orleans, and different places in France and Belgium, and I suppose they come in pots, and it is in a sack. The sack is generally rotten, and you need only to tear it to put it in the hole in the ground, and put the soil on it, and wet it down, and they will bloom in eight weeks from when you plant them. The magnolias and azalias will bloom within four weeks from the time you plant them. If you have limestone in your soil, however, I would not try it. They are pretty all winter and pretty all summer. The foliage has a peculiar effect when there is a wet snowfall. It is drooping, and has quite a peculiar appearance. Of course there is practically no foliage in the winter except the coniferous. The most beautiful flower in the winter I know of, a tree some ten feet high and nearly as broad, is right beside the city hospital in Akron, that has bloomed every year for 20 years, and a year ago this last summer it had 700 blossoms.

"THE DEMANDS OF THE DAY IN HORTICULTURE."

F. H. BALLOU.

It is quite safe to assert that there has never been a period in which the available results of horticultural research and experiment were in greater demand than in the present day. Each passing year thousands of our people are awaking to the aesthetic interest and financial possibilities of hill and dale—of the charms with which they may inoculate their fields, gardens or home grounds through the instrumentality of plow, drill, spade and planting trowel. Every mail which goes out from the experiment stations of our land is heavy with such publications as may be finished and at hand for distribution, to those who make special application for them. The same mails carry to inquiring correspondents, during the course of a single year, thousands of letters of regret explaining that numerous other publications requested are not available and that such phases of horticultural field work as would afford technical, practical or primary literature, well illustrated from nature, have been, so far, of necessity delayed through lack of time, funds or equipment.

It is of the complex character of this persistent and usually intelligent and reasonable horticultural inquiry, that I wish briefly to speak at this time. This demand of the day in horticulture, so far as related to experimental and research work, may be classified as follows: (1) Inquiry from commercial or professional orchardists and gardeners. (2) Inquiry from beginners in horticulture and those who desire to produce a superior product of fruit or vegetables for home or local market, and from those who wish to beautify their homes—to enhance their attractiveness and value by planting and care of trees, vines and plants. (3) Inquiry from those who have had their interest or curiosity aroused by tales of monstrosities and impossibilities in horticulture through the mediums of careless newspapers or the agency of unscrupulous nursery firms or their representatives.

I shall quickly eliminate the consideration of this latter class of inquirers from our discussion by stating that these are they who propound such questions as "how to grow a crop of lettuce in a few hours?" "how to produce strawberry trees by top-grafting strawberry plants on canes of raspberries?" "how to grow a heavy crop of potatoes treated with somebody's miraculous 'culture,' from seed tubers placed on the cellar shelves." These communications all demand a respectful reply and, incidentally, in aggravated cases, a judiciously directed "pen-stab" at fakes in general, which may cause the inquirer to think twice before again exhibiting his cupidity, aroused through the agency of those who have for sale the miraculous, the impossible, their own honor, and who cast a shadow on human integrity by false claims and vicious methods. With these eliminations, let us turn to the causes which are worthy of the deepest thought and most earnest effort on the part of our teachers and experimenters in horticulture everywhere.

It has frequently been asserted, and especially at meetings of this kind, that fruit production for the markets of our own and foreign countries is drifting rapidly into the hands of commercialists or specialists. This much let us grant for the sake of the promise that the masses may thus be assured of an unfailing fruit supply, which is becoming more and more to be regarded as an important factor in the food supply of the world. It is certainly desirable that the business of producing an abundance of fresh fruits of all classes should develop to such proportions that our laboring people in every avocation and position in life, may benefit by the commercially magnified scope of the fruit growing industry.

It has also been many times remarked that the time is rapidly approaching when the farm orchard shall be an institution of the past—merely a memory—and when the country home owner will depend upon the commercial orchardist for his supply of fruits for the family. The commercial grower may have cause for believing that such a state of things will, in the near future, come to pass. A journey by rail through the rougher, more isolated sections of our own state would, from superficial evidence, suggest this condition of affairs to be nearly at hand. However, there is no cause for alarm of the small producer; his position as a grower of choice fruits and vegetables, fresh to the consumer from orchard or garden, is just as secure as it ever was. In the great plan of life I am loth to believe or predict that the time is, or ever shall be, at hand, when those who enter commercial fruit growing as an investment for capital and swelling of fortunes will succeed in crowding from the field the well equipped smaller growers who are in the business from the love of it, and for the purpose of earning honest livings and paying for cozy homes. I am fain to believe that there are few commercial orchardists in our land who would delight in the knowledge that success in their vast industries would bring restriction, discouragement and loss to multiplied numbers of private growers of limited resources. God decree that the time may be indefinitely delayed when those so fortunate as to own a bit of land and a home, shall be driven upon the market to purchase, as a commercial staple, those commodities the production of which should add the greatest possible charm and beauty and homelikeness and enjoyment to even the most humble country cottage.

The attitude of our commercial horticulturists toward their friends who are engaged in scientific experiment and investigation, and their demands upon institutions of research, are such as command respect and confidence and friendship of professional workers to the greatest possible degree. As a matter of fact, our commercial orchardists, as a rule, are so closely in touch with scientific workers that they are practically abreast with the progress of their experiment stations. They have at hand and are profiting by the cream of results of years of careful scientific investigation. They take up, as issued, the various publications devoted to lines of work in which they are interested, subject these to critical study and analysis, and quietly accept or reject the matter contained therein, as it may appeal to them as helpful, or as of questionable value in their horticultural pursuits. Occasionally, it is true, the broad experience, the native originality and the superior financial resources of the large commercial grower, enable him to attain to that degree of advancement wherein he experiences an impatience at the comparatively slow progress science is making in our public institutions toward the development of methods and means which should prove superior to those of which he is availing himself. However, this present day demand of the commercial horticulturist certainly partakes, more generally, of the nature of a hope or an expectation more or less tardily (or promptly) gratified, than of criticism outwardly expressed. Indeed, surprising though it may be, the demand for advice or instruction from commercial orchardists and gardeners is but an iota as compared with the volume of correspondence from those smaller growers and home owners, who are constantly demanding the first or elementary principles of horticulture. From a representative lot of letters lying on my desk—carbon duplicates of those which I had mailed to correspondents—actual classification and count demonstrated that 65 had gone to those inquiring concerning the elementary principles of horticulture, while but 6 were in reply to queries from professional orchardists or gardeners. A number were indeterminate; but it is perfectly safe to assume that in these the proportions would not be materially altered. However, this comparatively limited demand of our commercialists for aid from our institutions of experiment and research calls for the most diligent study and application in departments of horticulture and the closely allied divisions of botany, plant pathology and entomology. In commercial fruit growing the A, B, C and intermediate principles of horticulture have long since been mastered and modified by each individual grower in accordance with his ideas or knowledge of what is best suited to local requirements and conditions. It is, therefore, instruction along advanced lines of investigation that this inquiry from commercial orchardists, as a rule, demands. The influence of heredity in fruiting trees and plants, as determined by selection and breeding; and the possibility of making further improvement in our better varieties through this medium; the most advisable methods of feeding orchard and garden crops and a study of the effects of the different commercial elements of fertility on the size, color and quality of tree and small fruits; the physical and physiological effects of restriction of size and modification in form of our orchard trees, as a means of lessening the labor and cost of spraying; improved formulas and methods in combatting the various fungi and insect pests of the orchard. All of these and various other issues in advanced orchard work call for the best thought and most earnest and persistent effort on the part of our professional service in horticultural, pathological and entomological research.

But what of the demand from the ever-increasing multitude of beginners in horticulture, smaller growers for local markets, home owners and home builders, for the primary or A, B, C principles of fruit and vegetable gardening and home adornment; this demand for such instruction, advice and help from our public institutions as will directly inspire courage, determination and enthusiasm in the cause of home establishment and improvement and business enterprise along private lines; this inquiry which exceeds, as ten to one, all demand from commercial growers? Is this an indication that horticulture is drifting gradually but surely toward commercial monopoly? Give these earnest seekers what they ask for and the result will be a multiplication of the number of happy and prosperous homes and small, but healthy, flourishing industries in our own and other states. It is needless to discuss what this means to our country at large, for the beneficial effects would at once be apparent in the stimulation of every worthy industry and enterprise, and of every helpful institution in our land.

It therefore becomes the privilege of every institution maintained for the public good, in which the study of horticulture and the dissemination of horticultural instruction and advice is made a feature, to become powerful factors in the encouragement, establishment and maintenance of private successful enterprise in horticulture. It demands not only the devoted services of those workers who have attained the higher altitudes in scientific research, but of those who, with equally high ideals and earnestness of purpose and application, realize the necessity and are possessed of the willingness to become very closely identified and in contact with Mother Earth in forcing from nature, in simple detail, the demonstration of those elementary principles without which the science of horticulture cannot be truly mastered.

ASSEMBLY ROOM OF THE COLUMBUS BOARD OF TRADE,

JANUARY 17, 1908, 9:10 A. M.

The meeting was called to order by the President.

The President: Perhaps we should have some of the questions now while we are waiting for the other members to come in.

A Member: I should like to have the question answered whether any commercial solutions will take the place of lime and sulphur?

The President: I understand Mr. Vergon of Delaware will be here to speak on the Rex as to his experience with it.

A Member: I should like to hear from our experiment station.

Professor Gossard: I have been keeping still because I thought somebody else might answer it more satisfactorily than I. We made some tests with the Rex, lime and sulphur, applying the material in one of our orchards ourselves, and making another test in the orchard of Mr. Sloan. We took notes upon their application and made examinations there this fall, but I have not drawn any very definite conclusion about its use in Ohio this year. If it is spreading at all, the San Jose scale has multiplied a comparatively small amount, and while the results in those orchards where we use the Rex, lime and sulphur are apparently very good, and in ordinary years I would ascribe it to the lime and sulphur without question, and say that the treatment was satisfactory, this year I simply say I do not know anything about it. I do not know whether the lime and sulphur did it or whether the climatic conditions did it. I touch upon that in my paper, which will be read later. While I am prepared to admit that there may be preparations that do as well as the lime and sulphur, I am not so sure of it as to say it is so.

A Member: How about the oil preparation, soluble oil?

Professor Gossard: That is one of the preparations I am prepared to say may be as good as the lime and sulphur, yet I am not ready to say it is so. I must have further evidence.

The President: In the Eastern States I have heard that some of the growers there are using the soluble oils in the fall just after the foliage drops, and then in the spring giving them another application of sulphur, and they claim that they have the best results with that.

Professor Gossard: Perhaps I am anticipating one of the questions on your program, "Is fall or early winter spraying advisable?"

The President: We should be very glad to have you answer that if you will.

Professor Gossard: The most of the fall work with lime and sulphur in Ohio—we have a bulletin published on the use of fall sprays with lime and sulphur—was done before I came to the States. Perhaps a little was done after I came. The applications being made chiefly by Mr. Houser, my assistant. I simply know the result of them. We have made some examinations, but so far as our experience is concerned, we did not get quite so satisfactory results with fall applications as with spring applications of our home boiled lime and sulphur. The reason seemed to be, as far as we could determine, that the lime and sulphur act in the summer by a sort of fumigation process, or else by some chemical process, which prevents the young scales from setting; in other words, there may be a considerable degree of hatching at hatching time in midsummer, yet though those scales hatch, they do not set, and though the trees may appear to be scaly in the spring, the scales keep gradually disappearing until by midsummer or a sort time after midsummer (the period of hatching is in June), by July and August you find comparatively few of them; while if applications are made in the fall, the wash has so much of it disappeared, washed off by the rains, etc., by that time, that it seems to me not so effective. Yet, I do not hesitate to say that if one possesses a large orchard, so that they cannot spray it in the spring of the year, all of it, owing to press of time, that it certainly is advisable to begin that work in the fall and continue during mild days in the winter. Do not apply it any time when the mercury is below freezing. For some reason or other the wash, when it congeals so quickly, does not stick, and the results are not so satisfactory. But if applied when the mercury is above freezing during the fall, or during the mild days in winter, it would be much better than nothing. The results would not be so good so far as our experiments have shown, as if applied in the spring.

In regard to fall applications of oil, so far as our experience is concerned, I have not found it as satisfactory as some of the Eastern experimenters. I do not question their results, but at the same time we had a result that was not in all respects satisfactory in one instance, in the orchard of Mr. Sloan, who is here this morning. We made some applications in the fall of the year, and as a result the crop was reduced at least three-quarters, and I think more than that, probably not more than one-tenth of a crop as I remember the figures upon those trees sprayed in the fall. Although I believe the manufacturers of that oil—it was Scalicide—I do not question that they believe in their product, and I think it is a good thing, too. In order to throw doubt on the result of what we obtained from the orchard I have mentioned, I believe they wrote down to a New Jersey grower, and had him pass judgment on his use of it over 600 acres where he had used it frequently, and that statement by him is being used through the country to discredit the result that we obtained. I would say that anyone who saw the details of that experiment, and came to any other conclusion in regard to the effect of the oil, that man is incompetent to carry on investigation, or does not know how to, or does not want to get at the fact. The oil killed the crop on those trees when it was applied in the fall. There was about, I think, thirty trees or such a matter in a solid block that we treated in the fall. Surrounding that block on three sides were trees treated in every other respect exactly the same way under the same conditions and in the same orchard, and, if I remember right, they were the same variety.

Mr. Sloan: Yes.

Professor Gossard: They were treated part of them with lime and sulphur, part of them with Scalicide, the same oil, only they were treated in the spring of the year. Now then it is useless to try to argue with me that when every tree except those that got the fall treatment had a good crop, and when every one of them failed it is ridiculous to say that the oil did not do that work. It did do it. I do not question the result from the Eastern experimenters. They have used that oil in the fall of the year I think without question, and without injuring the crop, but in that one instance we did injure the crop, and if that oil were applied again under the same circumtances and with the same conditions, and it was the same kind of oil—I do not know what the conditions were or anything about it; I know what they were so far as we could determine them, but not the element that produced the result—but it is useless to say that the same result would not be obtained under the same conditions. It would. That might be one in a thousand, or one in ten thousand, but there are circumstances under which it would happen.

The President: What per cent. did you use?

Professor Gossard: One part to 15 or 20, I have forgotten which.

The President: Most people recommend 1 to 20.

Professor Gossard: We used 1 to 20, I think, and the results of the spring applications were all right. That is, we used 5 per cent., 1 to 20. I feel there is no doubt but that we put enough on. I am accustomed when spraying for the San Jose scale to put it on liberally. When I spray for San Jose scale and am using oil, I expect to use it to that degree that I know it to be safe for use by the most careless man in the State of Ohio, and therefore we use it liberally. I presume that the amount of oil that went on per square inch of surface with our solution at 5 per cent was about the equivalent of what is put on at 1 to 15. That is probably so, and as the applications are ordinarily made, probably 1 to 15 is a better recommendation. But with that experience I have hesitated about giving an unqualified endorsement to fall spraying, with either the oils or with lime and sulphur. It may be that further experiments will show that it is more satisfactory. It may show that on the average it is just as satisfactory as results we get from spraying in the spring of the year, but our own experience in the experiments carried on by the Ohio Experiment Station have not borne that out.

Mr. Shirer: There is a man at Miamisburg in our county, who is spraying with a vengeance this fall with Scalicide, and I am anxious now after hearing your talk to know what his results will be.

Professor Gossard: That is very interesting to me, and I shall try to look out for that.

The President: Perhaps Mr. Shirer can report that to us at our next meeting.

Mr. Shively: Would you prefer to recommend the lime and sulphur to something that has not been studied? Do you consider the lime and sulphur the safest to use up to the present time?

Professor Gossard: Yes, for ordinary practice and general use, I consider it the best and most reliable. In other words I am not afraid to recommend the lime and sulphur wash to any grower in the State of Ohio. I know from my experience how careless he is, and what quality of help he employs. With the lime and sulphur he won't hurt his trees, and furthermore he is liable to do a great deal of good. If he is careless he may not do quite as much good as if he were careful, but he is quite certain to do a good deal of good, and for that reason I have adhered to the general recommendation of using lime-sulphur, and merely remarking in my letters that if he knows how to do it, and is a careful sprayer, the oils, some of the commercial preparations, have given good results, and that they might do it for them; I do not know but that I shall continue to recommend the lime and sulphur for the present.

Mr. Shively: We have San Jose scale in many orchards that have apparently developed this season, and it is new to many of us in Ross County.

The President: We will now hear from Mr. Shaw as to question 19, "Has the San Jose scale increased as fast as usual the past season?"

Mr. Shaw: My observation has been confined largely to nursery stock, and it has seemed to me that in taking a badly infested tree, where it has come from the scion or from graft, that it has not spread as much this year as in other years, that is, where we have a badly infested tree in the nursery row, we have usually found a number of the trees in the same row, and quite often in other rows infected, but this year from the observation that I have made, except on two or three trees in the same row, it has been seldom found; it has been found occasionally in some adjoining rows, but not very often.

It is difficult to make a careful examination in an orchard unless you are acquainted with that same orchard from year to year, and then you are apt to take into consideration the treatment it has had; but from what I have observed in nursery stock, it seems to me that it has not spread quite as much. I do not know whether it is due to the season we have had. I know that this year I never saw any live scale after the first of November, while in previous seasons I saw it as late as Thanksgiving time, if we had three or four warm days coming along at that time, and I have seen quite a number of the young scale at that time. I have been asked the question several times since my name was put down to answer this question, and on my saying that I thought it had not been as bad this year as it had been in previous years, I would invariably be asked, "Don't you think it will run out in a year or so?" I think a man would almost be justified in prevaricating in this connection, but I do not know any more in regard to it than I have stated above.

A Member: Probably the fumigation of nursery stock would kill it.

Mr. Shaw: I have always found it so.

Mr. Peterson: How is the scale disseminated?

Professor Gossard: If it is good and windy it will blow. During the hatching period if you will put a sheet on the leeward side of the tree ten feet away you will find that you will get a good many young scale on it. They can blow across. They are carried frequently to more distant points by birds flying from tree to tree having them entangled in their feathers or entangled in their feet. They may be carried by grasshoppers, and by floating spiderwebs.

A Member: And by horses and men.

Mr. Peterson: Is it likely that they would be carried a distance of eight or ten miles?

Professor Gossard: The birds often carry them that far.

Mr. Peterson: Then should one use a preventive spray if you do not find them in your own orchard?

Professor Gossard: No, I wouldn't do that. I would keep close watch, however.

Mr. Bassett: Has there ever been a case on record of knowing that the scale was carried by birds? I know that is a general belief. I know that is generally believed, but is it known? I am not questioning at all that theory. I think it is right, but I want to know, because I may want to make that statement myself some time, and some one will ask me if I am sure about it.

Professor Gossard: So far as I know, the whole matter is a question of circumstantial evidence. In other words, around birds' nests you will often find the infestation much thicker than elsewhere, and the location on the tree is such oftentimes, with certain limbs becoming infested first, that the natural conclusion is that the birds or grasshoppers carry it.

The President: We shall take up our program at this point, and the first thing that we have is "Comparative Methods of Orcharding and Disposing of the Product," by Mr. W. H. Goodwin, Wooster, Ohio.

COMPARATIVE METHODS IN ORCHARDING.

BY W. H. GOODWIN.

Orcharding through part of Oklahoma, Kansas and Nebraska, taking in also a little of Missouri and Indian Territory, differs considerably from the same profession (for it deserves that name) in Ohio. Soil and climate are entirely unlike; the soil being the product of disintegrated limestone of black loamy appearance and of distinctly alkaline reaction, and the climate must be experienced, it cannot be described. I cannot speak for southern Ohio, for my work has not been in that part of the state, but of northern Ohio I can speak, more or less definitely. There is almost every gradation of rainfall through the region which I intend to compare, and some other local variations would also have to be taken into account by the prospective purchaser or orchard manager who intends to locate there.

In the orchards the distances between the trees are varied by different individuals, but the best orchards I know of have rows 50 feet apart and 40 feet apart in the row. Some have the trees 32 feet apart each way, but the branches soon interlace and cause trouble, making it much more difficult to tend. Some few have the trees 50x32 feet apart and get very good results. Low headed trees are preferred, and from the beginning most trees are trained with this idea in view. I have never noticed any tendency of the bark to scald on Ohio trees, but there that is one of the first things to look out for, for wherever the strong sunlight strikes a large limb, or an exposed trunk, it is liable to scald the bark. This naturally runs into pruning, so will take up that next.

Pruning is not for an open head, but to get a low, spreading top, fairly dense and symmetrical. Dense because it must be so to shade the larger limbs and protect them from the bright sunshine. For this reason, many of the top limbs pointing toward the center are left, as well as those which point outward. The vertical leader always being kept in subjection, produces the desired effect and protects the larger limbs from sunscald.

Cultural methods are different in many respects, for here climate and soil play an important role. The first few years the orchard is usually given up to growing some crop, often between the rows of trees. Of course, this is not always practiced, and quite often the orchard is kept with a loose top dressing of soil for the first six or eight years. The soil is kept loose with a spading disc, set on an extension frame and having a space the length of one gang of discs between the gangs. Some use the ordinary disc, going through the orchard both ways, cutting out all weeds and having the soil loose on the surface. Their object is to hold all the moisture they can for the time when the lack of rain often makes it imperative, and that surface evaporation be reduced to a minimum. This loose soil mulch seems to be number one for that purpose, besides making an excellent surface to absorb all the rain that falls. It necessitates, however, quite frequent cultivation.

Small ditches are blocked with brush by laying it with all the butt ends up stream and burying the ends. Later on, a grass mulch of the native grass that comes on ground that has been cultivated, is allowed to grow and is mowed three or four times per season. This forms a mulch that serves a double purpose in preventing excessive evaporation and preventing the washing away of the soil by dashing rains.

You don't have to do that here, but rather do the opposite, by plowing the soil toward the trees and tilling to get rid of the surface water and produce deep root systems. Spraying is more thorough there than here, the best results being obtained with five sprayings, though four give excellent results. The worms seem to be like the people—full of energy and hard to kill, hence the results of spraying are not quite so satisfactory as those obtained by some people here in Ohio. San Jose scale is not present, except in one or two localities, and those are probably entirely destroyed by the present time; so the lime-sulfur spray is not needed, but makes the Bordeaux spray before the blossoms open imperative, in order to control apple scab. The second spray has poison added to the Bordeaux, and the last three have the Bordeaux omitted, which may account for the smaller amount of russeting in their sprayed fruit.

The apples are picked in both baskets and sacks, but the baskets are preferable in some respects, and good strong oak baskets, with almost round bottoms and holding about one-half bushel, are used. They also have a small wood handle on a wire bale and a hook fastened on either side of the bale and twisted together at the end that hooks over the ladder rung. Less fruit is gathered before the picker has to visit the sorting table, but less fruit is bruised, if the pickers are ordinarily careful, and the baskets are easier to handle. The day's picking is barreled or boxed as fast as it is picked and the fruit hauled away to the storehouse or the station. The sorting table is about 8 feet long, 4 feet wide and 4 feet high, with a slat bottom running lengthwise, and having the lower end just high enough to put a barrel under, and narrowed down at that end, too, so that the apple will readily fall into the barrel if allowed to do so. A sack without a bottom, tacked to the end, completes the arrangement. When the hooks at the lower end of the sack are dropped over the side of the barrel it holds the fruit and prevents bruising. A man on either side of the table sorts and grades the fruit as it passes in front of him. Sometimes two or three spouts are used and two or three grades are made beside the culls. This plan is used by the more up-to-date growers and readily pays for the extra labor and care. Tight bushel boxes are considered the best form of packages, and the fruit in them sells for more money per bushel than by the barrel. Many people in the city markets prefer to buy only a bushel at a time and think they can readily afford a bushel of apples where the price of a barrel would be prohibitive. There is also a demand for fancies in the larger cities that is catered to by putting up a select grade of fruit, leaving the smaller fruits evener in size and making them appear better than if the larger ones were left with them.

The man who cares to have another good crop of fruit following the one he is harvesting, oversees the picking himself, or has some careful, competent fellow oversee the work for him. A broken limb means the spoiling of the shape of the tree and may be the cause of its dying a season or two later, through letting the sun shine in on some large limb and scalding the bark; this being followed by borers often leads to the removal of the tree through the lack of a little care in the beginning.

Ladders of a peculiar type are used, being made with a spread of 2 feet to 2 feet 8 inches at the bottom, with the top narrowed in and bolted to a single bar which runs up three to six feet above the top of the ladder proper, and makes an excellent rest to put against a limb. The extension bar has rounded edges to prevent the loosening of the bark on the limb it is resting against. Thus the point bearing type of ladder prevents twisting or turning over of the ladder and saves many small fruit-bearing limbs and a goodly number of larger ones, some bruises and a lot of bad temper on the part of the user.

All these little differences are not practiced in any one orchard, but are the gleanings of what I judged to be the best, during my associations with orchard work; having observed the various methods practiced by growers and taking what was good in each and ignoring what was plainly detrimental or unprofitable.

Another idea that is not to be ignored is the owning of a small cold storage plant, large enough to accommodate your crop and putting your apples on the market when the prices are at their best, or at least hold them until the demand for good fruit, at the Christmas season or a little later, makes it a paying proposition.

Faults I will not mention, for if I did it would do you no particular good, as they apply only to a local region or some individual and cannot be handled in a general way.

Mr. Miller: I would like to ask something about the construction and mode of operating the small storage plant the gentleman speaks of.

Mr. Goodwin: I haven't been through them. That is not my business. Entomology is primarily my work, and this is the only work that is associated with orcharding that I have observed as I have been traveling around. I have noticed that the cold storage plants are built usually so that they get their own ice from some little stream or pond that is close by. Of course that ice serves the purpose as well as any, so that the early apples may be held until later in the season, and that is the only necessity for their having the ice. After the apples are once cooled, the temperature can be held. The plants are built sometimes with a double wall and sometimes with three, and they are packed with sawdust, perhaps one with sawdust and the other is used as an air space. That makes a very tight apple house, and they are usually kept closed after the apples are once put in until whenever they wish to open them. The temperature is closely observed. They may go in every day, but some may not do that. I haven't had enough experience to say how they operate them or work them. I think it is largely a matter of experience and that it is necessary to try it for yourself, as many of the large storage men will not tell you how to do it.

A Member: Are there more insect pests there than here?

Mr. Goodwin: I can't say that there are more. I really believe there are less, but the codling worm has twice as much get-up to him. He is hard to kill when he gets a start. In the packing house I think I have seen 50 per cent. of the apples that were marked, and I should say 40 per cent of them perhaps, so you can imagine the effect that the insects there have upon the fruit. In my opinion it is not because there are so many insects there, but the ones there get in pretty good work.

Mr. Knellinger: Speaking of an ice box for cold storage, we built one a couple of years ago, and used ice in it, and I guarantee that 50 tons of ice would carry that ice box, 50 tons for one six months, and 50 tons for the other six months. That ice box was large enough to hold 25 head of cattle. It was fifteen feet high. What I am driving at is that I would guarantee that if you would fill it twice, 50 tons at each time, it would carry it a year, that is, on that amount of work, keeping it full of cattle. When they come in a carcass of beef is pretty warm. If you build an ice box the size of that one—I don't know how many barrels it would hold—and you put in your 50 or 75 tons, I believe you would have enough ice to run you a year for the fruit.

The Secretary: I think the later idea is not to store the ice in the fruit house. The first plan was to build large, heavy buildings. There was a good illustration of that in the fruit house operated by Mr. Hunt, whom most of you know, at Euclid. That is a large, heavy building, the lower story being used for apples and the entire upper space was used in storing ice which is made and elevated quite cheaply from an adjoining pond. That is perhaps one of the best methods to use for those who wish refrigeration the entire season during the summer, but for those of us who want it for winter apples I am satisfied it is better to have a small ice box, like Mr. Vergon's method, or as the one I employ, and put in from 15 to 20 tons as the case may be. Put it in first a few days before you want to pick and store your winter apples. In this way you can have a much smaller ice box and a lighter building. You do not have to support that immense weight and can economize in ice, because the ice is mostly needed in the latter part of September and in October. By opening up the flues the cold, frosty nights in October and November you can keep it cool with much less ice. My own building is 30x40 with a capacity of five or six thousand bushels, and probably a little more, and uses probably on an average thirty tons of ice a year. This would vary a great deal with the season. I don't use any in the spring. This is put in there the latter part of September and is used to carry the apples until the cooler weather. I always sell out before spring, and consequently have no use for ice in the spring. If I wanted to carry the apples until June, I would have to fill the box in winter. Mr. Vergon does that, but my trade commences in July, and is a continuous trade throughout the summer and fall, supplying grocers on orders, and I usually aim to be sold out before active operations in spraying in the spring, the latter part of March. It is possible we may still further economize in the construction of cold storage buildings by placing our ice house alongside of the apple room. I am not satisfied in regard to that, but if you can, you can see that we can still further economize, as a lighter building could be used. There might be a question as to whether the right circulation could be secured. I am not ready to say in regard to that. Mr. Vergon adopted a new departure a year ago this past fall by fitting up the basement in his large stock barn as his apple room, and building an ice chamber in the center of it. He used this for storing of his later apples, the Stark and Rome Beauty and Ben Davis, and you know they are not picked until later, when you can get a great deal of ventilation. Mr. Vergon is here and perhaps can give us the results of last year's work. In that case the ice he used was put in more for its effect in April and May, as he usually carries the apples later than I do. This year my crop being considerably smaller and not well balanced, consisting largely of Grimes' Golden and Rambos, I decided not to put ice in my building, but to sell a carload, which I did, of Grimes' Golden and Rambos, and I reduced my stock so that I could dispose of most of them before winter, and in that case I concluded it would not pay to use ice for the cold storage, and I depended largely on ventilation with quite satisfactory results. I might say that this fall the season was very favorable; October was a cool month, and that has much to do with it. My storage building is such that we can drive in with the team and unload, and we aim not to go into it in the heat of the day. On the cool days we haul the apples right in when picked, but on hot days they are allowed to stand in the shed all night, and are hauled in the next morning. We usually can keep the temperature down between 40 and 45 when we are hauling in, and later in the fall when we get through going in, the temperature runs from 31 to 33 during the entire season.

Mr. Vergon: I haven't much to add to that. We have two boxes instead of one, and we didn't ice them at all this year because we had no apples to speak of.

The Secretary: Do you think you can get the proper circulation from your ice box into your cellar?

Mr. Vergon: Yes, I think we did. A year ago we iced it in the spring, and it did first rate. We couldn't keep it down to 33 degrees; didn't try to. It ran along between 38 and 40, or somewhere in there.

The President: Has the Rex Lime and Sulphur preparation proven satisfactory? This is one of the questions.

Mr. Vergon: We have only had one year's experience, and as far as I can say now it is the most satisfactory remedy that we have ever tried for the San Jose scale. While the orchard is nearer clear of scales than it has ever been for ten years, I do not give all the credit to lime and sulphur. I do not think the scale spread as much this year as usual. In fact I am sure it did not, because we left trees without spraying, and although other years there have been a good many scales on them, this year there were very few. The only drawback I see to the lime and sulphur is paying for it. It costs a little too much money.

The President: I might say in regard to the San Jose scale that this last year I used lime and sulphur, and this year I didn't find the scale. I can't attribute it all to lime and sulphur, because I think the season may have had some effect. My experience with it, however, is as good as Mr. Vergon's or better.

A Member: What did you use before?

The President: I used lime and sulphur for two or three years, and I used crude petroleum before that.

The President: We will next hear from Professor Selby on "Plant Disease in 1907."

REPORT ON PLANT DISEASES FOR 1907, WITH OBSERVATIONS ON MODIFICATIONS OF BORDEAUX MIXTURE.

BY A. D. SELBY.

(*Committee on Vegetable Pathology*).

The matter of plant diseases was as complex and as varied as usual in 1907, but owing to the very limited fruit crop there has been less call from orchardists than usually occurs. Doubtless there are many problems to be presented here by our horticulturists and I assure you all that such will be most welcome.

WINTER OR FREEZING INJURY TO FRUIT TREES AND SHRUBBERY.

One of the striking troubles of the season is a legacy from that of 1906, in a way. I allude to the serious freezing injury of trees and shrubbery. This occurred over nearly the whole of the state and has been especially severe upon young apple trees, while peach trees, plum trees, cherry trees, raspberries and shrubbery have all suffered. Some of the results of the freezing injury have been most astonishing. I refer especially to the fact that young trees of certain standard varieties of apple trees, as, for example, Baldwin, Rome Beauty and Hubbardston, have suffered so much more severely in nearly all localities where grown than have the less prized sorts. While this has proved true, there seems to be no good reason for condemning the sorts which suffered worst.

In a general way, the statistics of apple injury are interesting:

At Carpenter, Meigs county, on the Southeastern Test Farm, the Station lost practically all the four-year-old Rome Beauty trees, 96 in number, while out of 48 Jonathan of the same age, 5 were a total loss, with injury to some others, and York Imperial showed only one or two trees injured. The Jonathan and York Imperial were all in land under cultivation in cover crops, while one-half of the Rome Beauty trees were also in cultivation and one-half in *sod mulch*. There seemed to be no connection between the method of handling and the freezing injury. Others in southern Ohio also lost heavily of young apple trees of the Rome Beauty variety. Among these, Mr. Chas. H. Ochs, Lancaster, O., lost of three-year-old trees in sod mulch, the following percentages: Baldwins 12 1-2 per cent., Grimes' Golden 11 per cent., Jeffries 1-2 per cent., Hubbardston 60 per cent., Ben Davis 2 per cent., Gano 0 per cent., Jonathan 1 per cent., York Imperial 0 per cent., Rome Beauty 55 per cent., Stark 6 per cent. His neighbor lost 50 per cent. of Rome Beauty and 75 per cent. of Hubbardston.

In northern Ohio, Mr. F. L. Allen, of Kinsman, lost about 80 to 85 per cent. of one-year-old Baldwin trees and 40 to 45 per cent. of Jonathan and possibly 15 per cent. of Northern Spy, the latter chiefly a year older. At Hudson, Dr. Chamberlain lost 85 to 90 per cent. of three to five-year-old Baldwin trees, all in sod. Mr. Allen's trees were partly in cultivation and partly without.

As most of you know, this freezing injury caused at times death of the tree above ground and at other times local dead areas on the trunk. Some examples are shown in the illustrations (Figs. 1 and 2). Usually the direction of the exposure, or, if we may use the term, the side of the trunk injured, was northerly or northeasterly; this is taken to indicate injury in the October freeze. Where later freezing was the chief factor, southerly and southwesterly portions of the trunks were most injured. Occasionally the dead spots were small, especially where the injury was slight, but more often relatively large areas extending some distance up and down the trunk were killed. The trees died as from lack of water in these cases. Other consequences are feared running through a number of years. All these injured trees tended to produce sprouts below the points of injury. Even those killed to the ground usually sent up sprouts freely from the base. Japan plums were badly killed back over the state, as were also raspberry plants and ornamental shrubbery, including arbor vitae.

That this injury was foreshadowed in September, 1906, by the fears of some orchardists who scattered mulch away from about the bases of their trees, shows how unusual were the conditions at that time.

CONDITIONS OF LATE SUMMER RESPONSIBLE FOR WINTER INJURY.

A study of conditions shows that the season of 1906 was phenomenal in several respects. To quote from my report a year ago: "The season (1906) was one of abundant moisture in most parts of the state. The temperatures up to August were slightly below the normal, while August and September were relatively warm, being more than three degrees above the normal. With this warm August was a rainfall nearly two inches above the normal; September had a normal amount of rain and October was summer-like until the blizzard of October 10th to 13th."

There were no preparatory frosts, so that growth once started, tended to continue and the whole tree was in an unripened state when the October freeze visited us. Much of the injury was apparently done in October and was supplemented by mid-winter freezing.

The vigorous growing varieties of apple, like Baldwin, or the late growing sorts, like Rome Beauty and possibly Hubbardston, were the least prepared for such premature cold and accordingly suffered worst. I can find no sufficient evidence that we must condemn the varieties for these reasons. It may be wise, however, to produce the tops upon trunks of the other type. The man who had a young apple orchard badly injured last winter is not likely *soon to forget the experience*, I am sure. We will expect further consequences of an unsatisfactory sort for two or three years or more. A fuller discussion has been prepared and will appear as a bulletin of the Station.

THE SEASON OF 1907, AND PHYSIOLOGICAL DISEASES.

The season of 1907 has been a short crop year for fruit growers and for clover and alfalfa growers, as well as for potatoes and many cereal crops. It was a summer of low temperatures throughout—September was the first month since the warm month of March, to reach a mean normal temperature and it has been followed by a cold October and a slightly less cold November.

This means that plants have not behaved normally because the customary temperatures have been lacking—*and without the proper temperature stimulus, many of our cultivated plants fail to yield a normal return.* For the same reason, lower temperatures, many diseases of plants have been less injurious than is commonly the case, while a few others have been abnormally prevalent.

Referring now to the season and the behavior of different plants, we are reminded of certain compensating forces in nature. While certain plants may be retarded and are retarded in development, certain others are favored by low temperatures and the accompanying moisture of our climate. The notable example of improved development is the cultivated grasses; by these I do not mean the clovers, but the true grasses of pasture and meadow. When since 1895, if even then, has there been equal growth of meadows and pastures? We may have thought the oats and wheat were also to be very good, since these grew so vigorously, but other forces relating to maturity sadly interfered.

These abnormal conditions brought us on the whole serious impairment of *alfalfa seedings*, the frost killed most of the *red clover seedings*, the *oat crop* was badly shortened and it would seem that the *potato crop* was much reduced by the same lack of suitable temperatures and sunshine. In all these cases the soil and air both partook of the lack of warmth and with that, the soil held excessive moisture and lacked aeration.

We had a great many complaints at the Station because in midsummer alfalfa plants turned yellow and made no growth. Invariably the trouble turned out to be due to physiological conditions, viz: lack of soil aeration and absence of most favorable temperatures.

This physiological sickness was not confined to new seedings, though obviously very disastrous there and very discouraging as well, but extended to old alfalfa meadows and resulted in diminished yield of forage.

Oats showed frightful collapse by leaf-blight when the season turned brighter; it seems to have been due to the sudden stress of the change, possibly aided at times by plant lice or aphides.

With potatoes a form of collapse in the leaves was everywhere reported. During July this breakdown of the foliage was sent us from a dozen or more counties. The condition continued well into August and scarcely any fields of midseason potatoes showed normal conditions. Along with this physiological disease there was premature development of early blight and exaggerated estimates of damages caused by it. At the best only occasional potato fields made fair average yields, because the normal stimulus of sunshine and summer heat were lacking. In passing, I would suggest that the season adds its evidence as to the close relation between physiological weakness in potatoes and what we commonly call early blight. This is an especially promising field in which to overcome the disease by selection of seed from only healthy stools; to overcome it is largely a problem of breeding, as has been well brought out before the society by Mr. Waid last year.

FORCING-HOUSE TROUBLES.

Diseases under glass have been rather less serious as reported to us, than in the previous year. This is thought to be due to the practice of soil disinfection through formalin or soil sterilization by steam, both of which are now extensively and successfuly employed.

Lettuce rosette, *Rhizoctonia*, is still occasionally reported, as also rot or drop; both these diseases call for soil treatment as do nematodes on roots of plants. The same applies to bed-rot of tobacco beds, also caused by *Rhizoctonia.*

Downy mildew of lettuce, *Bremia Lactucae*, occurs occasionally; it is usually overcome by keeping temperatures low and avoiding moisture on plants. One plant grower at Miamisburg sent specimens of downy mildew of Crucifers, *Peronospora parasitica*, which he found on his cabbage plants. This, too, is avoided in keeping temperatures low.

Winter cucumbers often suffer from the mosaic disease, which, as before described in reports to this society, is a disease analogous in cause to "yellows" of the peach. The remedy is to remove diseased plants found early in the life of the crop. Forced cucumbers are also attacked by powdery mildew, *Erysiphe*, early in the winter. Spraying with Bordeaux mixture has always proved effective against this trouble when applied early enough.

DISEASES OF TRUCK CROPS.

Truck crops, including potatoes, seem to have suffered most from delayed growth and development. The complaints of special diseases have been fewer than usual.

The white onion growers of Hardin county complain of serious losses from "rot" and "smudge" on their onions. Some of this trouble may come from continuous cropping the swamp lands in onions.

Beans and peas have been diseased, as usual, but peas have made poor returns. Diseased seed and other unfavorable conditions may explain this. Seed bean growers of Rocky Ford, Colorado, make certain claims of freedom of their arid grown seed from Anthracnose (pod-spot) of beans. Those tested by the writer in 1907 showed very much less disease on the seedlings than did the ordinary seed, possibly grown in the East.

As I reported last year, we have been experimenting with formalin treatment of seed sweet potatoes and have found that if the rotted parts are rejected, new beds made or old ones sterilized to kill out infection in them, the seed treatment of the sweet potatoes gives satisfactory results.

The following are the results of the treatments:

TREATMENT OF JERSEY YELLOW SEED SWEET POTATOES WITH FORMALIN.

By A. D. Selby and J. M. Van Hook.

Number of Lot and Number of Roots	Strength of Treatment	Yield Plants to June 1.	Total Y'ld Plants to Aug. 1	Condition of Plants	Dis. in Old Roots
I—Decay cut out, 20	1 lb to 50 gal. 2 hr.	147	236	Some doubt	3 specs.
II—Uncut sound, 20	1 lb to 50 gal. 2 hr.	221	341 +	Satisfactory	1 specs.
III—Uncut so'nd, 20	1 lb to 50 gal. 4 hr.	149	274	Satisfactory	1 specs.
IV—Uncut so'nd, 20	Untreated	139	244	Doubtful	8 specs.
V—Uncut sound, 20	1 lb to 25 gal. 1 hr.	160	286	Satisfactory	0 specs.
VI—Uncut so'nd, 20	1 lb to 25 gal. 2 hr.	151	280	Satisfactory	0 specs.
VII—Unc't s'nd, 20	1 lb to 25 gal. 4 hr.	153	310 +	Satisfactory	2 specs.
VIII—Unc't s'nd, 20	1 lb to 12 gal. 2 hr.	154	287	Satisfactory	1 specs.
IX—Uncut, 20.....	Untreated	106	207	Doubtful	8 specs.
Soil lots, 1–7 treated	Average treated	162	288	....	....
IX—Untreated.....	Average untreated	123 +	226	....	....

It seems to the writer that sweet potato growers may greatly improve their present conditions by greater care in beds with treatment of seed roots added. The strength of treatment recommended for potato scab should be used.

DISEASES OF MUSKMELONS AND CUCUMBERS.

Diseases of these cucurbits have been less prevalent, but the crop was disappointing for reasons earlier discussed at length. Cucurbits require warmth and sunshine and when these are lacking, results are discouraging. Doubtless some growers had fair returns from plants started under glass. I did not observe any downy mildew during the summer of 1907. Did any growers present observe the usual blighting? None was brought to the writer's notice.

DISEASES OF POTATOES AND TOMATOES.

Physiological collapse and its gradation into early blight have already been mentioned. We were exposed to losses from late blight, *Phytophthora infestans*, in the northern portion of Ohio for 1907, just as we are to be again in 1908; but for 1907 the losses were unexpectedly small, considering the fact that the disease was abundant about Wooster, August 9, 1907. During two seasons, co-operative spraying experiments for potato blight have been conducted; in the season of 1907 these experiments were supported by the Department of Co-operative Experiments and the visitations made by the Botanical Department.

The gain of sprayed over unsprayed potatoes in these experiments in Portage county has been from 13 to 25 bushels per acre upon an unsprayed yield of about 75 bushels per acre, or 33 1-3 per cent. gain for the best return at one point, while about the same number of bushels gain on an unsprayed yield of 123.5 bushels, or 20 per cent. gain was obtained at another point. Gains elsewhere were from 10 to 12 1-2 per cent., and have been sufficient to cover the cost of the treatment with usually a slight margin of profit. In seasons of late blight epidemic like 1905 the profits would be very large in northern counties; at the same time, spraying as an insurance is well worth while where no more than the cost of treatment is returned. For an insurance outlay to be more than repaid is still better than a balanced account. We find that spraying *for late blight at intervals of two weeks, beginning about July 20th has given in Ohio as good returns as more frequent applications.*

Tomatoes behaved in a puzzling manner in 1907; while plants started under glass made good growth and set full of fruit, there was very great delay in ripening of the fruit and consequent disappointment as to yields.

Plants started in hotbeds and transplanted later, were even more unsatisfactory in behavior than those started under glass. Diseases were less in evidence than in an average season and I can attribute the behavior of the tomato plants only to the low temperatures and diminished photosynthesis of the plants without enough heat and sunlight to stimulate them in a normal manner.

In the fall crop of tomatoes under glass there has been a very large amount of "mosaic disease." This disease is spread by carelessness in topping the plants. This mosaic disease, like other similar diseases, is communicable, and separate topping of healthy and diseased plants would be profitable and of little difficulty in practice. A carbolic acid solution in which to dip the knife would also be advisable.

DISEASES OF ORCHARD FRUITS.

In the absence of even a moderate fruit crop, orchards as well as their diseases have received diminished attention. Freezing injury to trees has already been treated at sufficient length.

Like all cold spring periods, 1907 witnessed an excessive amount of peach leaf curl, *Exoascus deformans*, and for like reasons there was a phenomenal amount of plum pockets or bladders, *Exoascus pruni*, upon certain varieties of American plums. Leaf curl of the peach is most successfully controlled by both the sulfur sprays used upon dormant trees for scale insects and by Bordeaux mixture, applied before blossoming in spring. Occasionally, however, a grower lets the curl slip up on him. I am sometimes led to inquire, "How would we grow Elberta and some other present day standard varieties of peaches, were our knowledge of control of leaf curl no further advanced than when these varieties were introduced?" Here, as elsewhere, there has been certain progress.

I would suggest in the same connection that the off fruit year is a good time to clear up sources of the rot infection of stone fruits. Remember, the cluster-cups of this fungus grow from old mummies the second year. This covers both rot of peaches and rot of plums.

Shot-hole or leaf-spot fungus of plum and cherry, *Cylindrosporium padi*, was quite bad during the rainy late summer. Trees defoliated very early may be too full of sap from after-growth to resist freezing in winter.

On the matter of apple diseases I have little new to offer beyond the freezing injury. We have determined a new apple scurf disease fungus, *Phoma prunicola*, that was sent from Muskingum county and also collected on my grounds at Wooster, but in both cases it comes as a leaf-spot. Upon the leaves it appears as a rather insignificant leaf-spot, possibly of no great importance as a foliage disease.

Stevens* of North Carolina has worked upon this species as a disease of twigs similar in effects to *Sphaeropsis* canker. We may not have the same type with us.

I may mention also a good deal of apple rust, *Roestelia*, during the season upon wild Crataegus as well as cultivated apple leaves. This is the summer stage of the cedar rust, of which the spring cedar apples are the winter form. Such rust is to be expected in the neighborhood of infected cedar trees.

I ought possibly also to call attention to the common dropping of fruit tree leaves, especially in seasons like last, when the interior leaves become shaded by newer and later growth. Occasionally the yellowed leaves of this sort fall very freely; this was noticeably the case shortly after the bright weather in July. Such leaves seem to have done their work and, not being where they are stimulated by the sunlight, perish through lack of work. It is a natural condition and not due to disease, as sometimes feared.

DISEASES OF SMALL FRUITS.

One curious disease of strawberries was studied. This was an external blackening of the berries, accompanied by rotting after turning very black; a "smudge," almost a black-rot of strawberries. The fungus in the rot appeared to be a species of *Botrytis* and the attacks occur where the berries come in contact with the mulch of manure. It seems probable that the fungus was derived from the manure and that it will scarcely prove serious in normal years. The trouble did quite a little damage and is worth watching, however. Strawberry leaf-spot was very abundant during 1907.

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The situation with raspberries and blackberries under cultivation is quite unsatisfactory, owing especially to crown-gall and to anthracnose. I can report no new developments in this line.

Currants are steadily dying out by reason of cane-blight, *Nectria*, etc., and new plantings are limited.

DISEASES OF FOREST AND SHADE TREES AND ORNAMENTAL SHRUBBERY.

The discussion of tree planting and forest care calls renewed attention to diseases within this whole range of forest trees, shade trees and ornamental plantings.

So little has yet been done upon the diseases of Ohio woodlots or forests that little can be offered. We know that wound fungi are very numerous and that localized decay and final death of trees is brought about by these gill-fungi or Agarics. Much has been done in Europe in this line, which is strictly that of forest pathology. The mention of the subject will suffice here.

Oak leaves were much curled by reason of greenfly; and oak leaf-spot, attributed to Phoma, was also collected in Jackson county by the Department of Forestry. In plantings of catalpa a good deal of complaint has arisen by reason of the death of terminal shoots and because of dying leaves. The dying shoots are largely caused by insect larvae which bore into the part. These have been reported upon by the entomologist in circular letter, with illustrations, which has been distributed.

The leaf-spot diseases are often quite serious. Of them we may distinguish two diseases, viz: the common leaf-spot, due to *Phyllosticta Catalpae*, which is rarely serious, and the confluent leaf-spot, caused by a species of *Alternaria*, which may prove menacing on new plantings. Remedies have not as yet been thoroughly worked out.

Much complaint was made during the summer of 1907 by reason of leaf collapse or tip-burn in maple leaves. This came at such a time as to suggest, in the absence of parasites, a physiological trouble, probably explained by the conditions which were disastrous to oats, alfalfa, etc., in so far as these may apply to maples. Ornamental plantings were much injured by freezing as before mentioned. Two distinct fungous diseases of privet have, I believe, been previously reported.

GRAIN DISEASES.

Although not strictly a horticultural topic, it has been my custom to touch upon grain diseases.

These have been very prominent in 1907; especially is this true of the smuts and scab in wheat, the ergot in rye and the smuts of corn and oats. Wheat mildew, *Erysiphe graminis*, was present to an unprecedented extent upon wheat, causing early dying of the blades and conspicuous coating of the culms. This showed as the oidium stage in the fall of 1906 along with or earlier than the fall outbreak of rust, yet I can find little evidence of injury by the mildew, although it certainly did harm. While rust of wheat was most widespread in occurrence, the injury to the crop appeared to be slight and plump grain was the rule. The unprecedented vegetative growth of the wheat plant may in some way be associated with the plump crop, though it could not bring heavy yields.

Wheat scab, *Fusarium roseum*, was uncommonly plentiful and dead heads or parts of heads with white, shrunken kernels were much in evidence. The hairy glumes of some wheats seem to catch the spores of disease. Velvet Chaff showed about 5 to 7 per cent. scab at the station, while Lebanon, Deitz, Fulcaster and others showed high percentages and much bad grain, and Poole was much less affected. We are studying this and other grain diseases at present and may have more knowledge later on.

Loose smut, also called black head of wheat, *Ustilago Tritici*, was very abundant everywhere over the state in 1907. This fungus is thought to infest the seed grain, and we may therefore look to the conditions in the fall of 1906 for a part of the explanation of excessive loose smut in 1907. I suggest that the excessively favorable fall conditions of 1906 kept alive nearly every seedling plant, even though parasitized, and consequently these lived to bear black heads. I predict that a much smaller proportion will be found to have survived at harvest time in 1908.

We have successful methods of seed treatment for loose smut as well as for stinking smut, *Tilletia foetens*, which was also observed at several points. The stinking smut is the more easily prevented.

Oat smut is more effectively controlled since the formalin treatment came into use, while corn smut yet resists our methods of treatment. Owing to its survival in the organic matter of the soil as well as in manure, the summer infection of new parts, rather than the seed infection, is the chief source of the disease. Something may be done by selection, although the difficulties are great. We shall be compelled to correlate all the conditions to determine whether observed variation in the amount of smut in ear-row tests is in any way due to differences in susceptibility or resistance.

DISEASES OF FORAGE CROPS.

I have mentioned earlier the killing of red clover seedlings by frost and the serious alfalfa troubles from physiological breakdown. I should add that red clover anthracnose, *Colletotrichum trifolii*, has spread over the southern one-third of the state and this disease has destroyed many of the young clover plants since harvest time. I believe that we have other diseases associated with the anthracnose on red clover and it is difficult at this time to determine which is the most serious. You can aid by observations and specimens. Apparently, while this fungus attacks alfalfa and has been collected on alfalfa at Wooster, it does not attack alsike clover; and mixed seedings of red and alsike clovers may be desirable for a time.

MODIFICATIONS OF BORDEAUX MIXTURE.

The high prices of copper sulfate in the earlier part of the season of 1907 led several persons to write to the station seeking advice as to the possibility of cheapening the spray; the discussions of one year ago upon the matter of reducing the amount of copper sulfate for Bordeaux mixture used upon apples emphasized the question to which Prof. Gossard's results from the use of soap as a sticker in grape spraying brought still more data. The writer gave a good deal of attention to the considerations involved in modifications of our standard Bordeaux mixture. These various matters may be covered chiefly in three considerations:

First—If practicable, such modifications should hold the cost of the efficient spray as low as consistent with efficiency.

Second—To be of most effect it would appear that an additional compound which should serve as a dilution-sticker, thus combining the valuable characteristics of the soap sticker, would be more advisable than a mere dilution of the standard Bordeaux mixture.

Third—This dilution-sticker or other compound should be of such character as to be readily obtainable and preserve its characteristics in the presence of the lime added in the ordinary spray.

As pointed out in a paper read before the October field meeting of this society, Bordeaux mixture, in my judgment, owes its relatively high efficiency as a fungicide to the insolubility or slow solubility of the copper hydroxid, which is its essential constituent. Then it is proper to keep in mind in all modifications these essentials of the original Bordeaux mixture principle. A simple reduction of the strength of the mixture is the simplest method of all to cheapen the mixture or possibly reduce russeting effects as on apples, yet the slow progress made in this direction in the past fifteen years, in spite of many suggestions offered, would indicate that a better method may be required. The writer has considered a large number of substances that might meet the severe conditions of being *cheap, of sticker character*, and precipitated in suitable form in *the presence of lime.* The dilution-sticker addition to Bordeaux, as in the case of soap, reported by Prof. Gossard last year, would serve the purpose of increasing the mass of the suspended precipitate, in which the copper hydroxid would be distributed and suspended by agitation of the liquid, and may serve also to increase the efficiency of the spray by prolonging the period in which the copper compound would remain available to the atmospheric solvents. Thus a much less amount of copper might be made actually more efficient than a larger amount without the sticker.

Of those compounds considered the most advantageous, before trial, seemed to accrue to the well-known copperas or iron sulfate. Its points are:

First—It is very cheap, being produced as a by-product in wire fence manufacture.

Second—Iron sulfate forms a flocculent hydroxid, which serves or may serve well as a sticker.

Third—As with copper, this hydroxid is formed in solutions upon the addition of an alkali or alkaline earth, such as lime.

By trial during the summer these characteristics appear to be such in the Bordeaux modifications. It was not a favorable season for the test of a new form of spray, yet some features may have been brought out. Before stating the details, I wish to be understood as presenting this matter in the light of an experiment possibly worthy more extensive trial. It is clear that the fall in the price of copper and of copper sulfate leaves the need for such practical modifications of much less urgent character than a year ago.

Letters were sent last spring to a few apple growers and to a limited number of grape growers, suggesting the trial of what was then called iron Bordeaux mixture in comparison with standard Bordeaux mixture. Later similar tests were made on potatoes. The following formulae were suggested:

MODIFIED OR IRON-BORDEAUX FORMULAE FOR TRIAL

	On Apples.*	On Grapes.*	
		Stronger	Weaker.
Copper Sulfate	2 lbs.	4 lbs.	2 lbs.
Iron Sulfate	2–3 lbs.	2 lbs.	4 lbs.
Lime	4–5 lbs.	6 lbs.	6 lbs.
Water to make	50 gal.	50 gal.	50 gal.

*The same strengths were tested on potatoes. The stronger formula was for check purposes. The real test was the weaker, or 2–4–6–50 one.

In Lorain county trials by the entomologist replaced only one pound blue vitriol with iron sulfate.

Upon apples a few lots of Baldwin trees with fair fruit crop were sprayed respectively with soap Bordeaux, iron Bordeaux and standard Bordeaux under direction of Mr. Ballou. He finds no sufficient data for statement as to relative effects of the sprays. President Cox kindly made application of two sprays standard and iron Bordeaux; he is unable to find conclusive evidence of superiority, though I judge the results were satisfactory. I judge irregularity of crop made conclusions of uncertain value. President Cox writes: "I do not like the color of the foliage sprayed with the iron Bordeaux, but it stuck all right." On the matter of the color of the iron Bordeaux spray, I confess that it is very rusty-colored. The covering or spreading of this spray here was superior to the standard Bordeaux, while possibly not equal to the soap Bordeaux. All operators whom I have consulted, report the spreading of the modified spray very satisfactory.

Upon grapes Prof. Gossard finds this modified spray of apparent value in holding arsenical compounds, being less open to market objections than the soap addition. The vineyardist reports unexpected corrosion of the wires where the iron Bordeaux was used.

Upon potatoes the results are somewhat inconclusive. In brief, they are that *two* pounds of copper sulfate in this modified spray gave about the same results as *four* pounds of copper sulfate did and both these gave better results, apparently, in 1907 on potatoes than the strong 6-6-50 Bordeaux. I may add in conclusion that this modification of Bordeaux mixture by reducing the amount of copper sulfate to two pounds in 50 gallons and replacing the omitted sulfate of copper with two to four pounds of iron sulfate or copperas, appears well worth careful experimental test, since the cost of the spray may thereby be reduced almost one-half and its period of adhesion be extended.

I have found upon looking over the literature that a similar spray was tried many years ago successfully upon grapes in Italy. I emphasize again the fact that iron sulfate is not a fungicide, but simply a sticker, like soap might be, but at one-fifth the cost. The writer, in proposing this modifictaion, did not do so with the idea that it will be superior to standard Bordeaux, although it seems to be in grape spraying; *rather with a view to testing whether it be not equal to the standard spray and at a greatly reduced cost for material.*

The President: Have any of you questions to ask in regard to this?

Mr. Shively: There seems to be a varied opinion as to the responsibility for the destruction of our trees in the last year or two. We still know the result of the October frost of 1906, and it has been a question with us whether that frost was responsible entirely for the destruction of the trees following. In our section we feel that while it is responsible to some extent, we feel that the extreme cold weather following the warm weather we had in January, which revived the sap flow, placed the trees in a certain condition, so that the following frost affected them so, and that this was responsible to a great extent. And later on we had the same conditions in February following the warm spell in January; we had it severely cold, then another warm spell in February with severe cold afterward. This last year our light crop was confined almost entirely to the southeastern quarter of all of the trees, almost to a line. All the fruit that we secured was on the southeastern part of those trees. Now it is a question whether it was the result of the October frost, or the result of later frost. It would occur to me that the sun perhaps had some effect in relieving the destruction of those frosts, and that by relieving that effect the buds were allowed to remain, which produced a fair crop in that particular part of the tree.

Now another question pertaining to the sweet potato scab. I have been growing many of them for many years; perhaps I have been growing them twenty years. Whether that relieves it from scab or not, I have used a small application every two or three years of air-slacked lime, and a liberal application of sand. I find that the potatoes on the untreated land right beside those that have been treated are affected, and those that have been treated are not or are freer from it.

Mr. Montgomery: I notice the professor says there was a large loss of the Hubbardston. I don't question that at all, but I should not like to let that statement go as being universal. The Hubbardston at my place did not kill in the nursery row, while the Rome Beauty and the Rambo did. The Hubbardston was all right. None of the trees in my orchard were injured by that freeze, but in the nursery row the Rome Beauty and the Rambos were killed, and the Hubbardston was not affected at all. I did not quite catch the cause of the abnormal growth of timothy, whether or not it was weather conditions. The leguminous plants seem to have been affected in the opposite way.

Professor Selby: With respect to all of the true grasses, the ideal conditions for their growth are abundant moisture and low temperature, and we had both.

Mr. Montgomery: It wasn't the sunshine?

Professor Selby: No, it wasn't the sunshine. The grasses are typically the plants that can get along without high temperatures and without abundant sunshine. On the other hand, leguminous plants are the very ones that cannot. Potatoes also.

A Member: Do you claim potatoes require a high temperature?

Professor Selby: I do not say they require a high temperature, but they require bright sunshine. They do not necessarily require high temperature; that is right. But the potato crop is perhaps the clearest expression of the action of the leaves in connection with the starch formation. With the tubers there is no reserve to draw on in producing, as with fruit trees. It must all be produced that season. The potato being a native of the Chilian Highlands would be accustomed, as its parasite proves, to low temperature, but bright sunshine.

A Member: In Ireland and Germany do they have bright sunlight?

Professor Selby: They have very satisfactory periods of bright sunlight, yes.

Mr. Gill: Professor Selby did not allude to the effect of the freeze in the fall of 1906 of the fruit that was then on the trees and not picked. The Columbus Horticultural Society had a meeting in Mr. Vergon's orchard that year after the frost. They had not picked before the frost more than half of the fruit, and they were picking then the fruit that was frozen solid, I understood. I would like to inquire the condition of that fruit later on, from the fact that I heard that many orchardists, feeling that the apples were destroyed, took them off, and made them into cider. If that is not necessary, I think it is an important thing for the fruit grower to know. Then I would like to ask how his crop turned out in comparison with the expectations and estimates made by the Horticultural Society members that were there. They thought he would have about 25 to 30 per cent. of a crop. Then again their Snow apples seemed to be nice, and I would like to inquire how that keeps in cold storage for late sales.

The President: Mr. Vergon, can you answer that question?

Mr. Vergon: In regard to the Snow apple, I do not think much of it for our part of the country. It is almost impossible with us to grow it right. Along about picking time, or say ten days before, it is very likely to crack, small cracks, and a good many of them on an apple, and when it does that it won't keep. What causes that crack I do not know.

Mr. Gill: The particular point I wanted to bring out was in regard to these frozen apples that were frozen on the tree. At the time they were picked they didn't seem to indicate any damage whatever, and whether they went into market all right or not was the point I want to make.

A Member: We had some apples that were frozen through solid three or four times before they were picked, and they came out all right. It didn't seem to hurt them a bit.

The President: How did they keep?

A Member: First rate, until the next spring. But the ones that were on the ground when they froze, it did affect them.

The President: Did they have as much juice in them after they were frozen—the ones on the tree?

A Member: I couldn't tell any difference. I think so far as we could tell they did.

Mr. Pierce: Didn't the apples drop very soon after the frost?

A Member: Not until very late. They did very late.

Mr. Pierce: In Northern Ohio they drop off.

A Member: Ours did not do that. However, ours were mostly all Ben Davis that were frozen that way. [Laughter.]

Mr. Shively: We are about fifty miles farther south. That frost caught us with about 6,000 bushels of apples on the trees and several thousand bushels on the ground, and it is a question of results. As you will know, most of those were Ben Davis. I would say we saw no bad results in them. I believe it improved the Ben Davis [Laughter], and another fact is that a car stored in cold storage in Dayton were kept until about the first of April. I delivered them to a commission man there, and they were examined, and they were satisfactory; they were in good condition, so I believe no effect was noted, especially on the Ben Davis, from that frost. It is rather an important matter.

Mr. Shirer: Do I understand that sulphate of iron is not a fungicide?

Professor Selby: Practically not. Its fungicide value is so small, I think we should ignore it.

Mr. Shirer: We have a man in our county who used it year before last on his apples, and he claimed it did as well as sulphate of copper. I did a little spraying on some grapes, and as Mr. Cox has said, I did not not like the looks of the fruit.

Mr. Knellinger: I have had a little experience on the winter killing of the young trees. I am sorry to know that our Rome Beauty does get killed sometimes. I would like to know the conditions that were surrounding the trees that were killed. I lost about 20 per cent. That was fourteen or fifteen years ago. The trees were planted in the spring, and were well planted, and were well cultivated with the hoe and spade. I got a tremendous growth on the trees the first year, too much growth, more than I would try to get again on any kind of a tree. That winter they were so full of sap that they burst all around the top of the ground. Nobody heard tell of the like in that country. Even our Horticultural Society thought I was wrong—did not believe it. A number of the trees were killed, a great many of them, and I replaced them that spring. All of these I believe I could have saved if I applied the remedy I adopted afterward. Do not grow the trees so fast, and if they should get strong and rugged, take and throw a load of dirt up to them, around them; pack it up about eight or ten inches. I have not had the same trouble since. I have used that dirt and that is what I adopted, and if it is worth anything to you, all right, but do not grow the tree too fast.

Professor Davis: I should like to ask a question for my own information. Perhaps some one here can help me out. Along the line of winter killing of trees I have had some experience during the last year myself. I have always had the idea that fall setting of trees was not as satisfactory generally for our locality as spring setting, in a practical way at least, although the theory may be all right. But last fall a year ago I had ordered some 1,500 or 1,800 apple trees, and in order to save the rush of spring work somewhat and divide it up, I set about 400 of those trees in the fall, and took special pains to pile dirt up high about the trees so as to get good drainage, as it seemed to me, and give protection. The others I heeled in and set out the following spring, Rome Beauty of the same variety. The result was that 90 per cent. of those that were set in the fall were dead the following spring, and only about 10 per cent. of those heeled in on the same order from the same nursery, put in in the spring, were dead. I am not able to account for that except by the greater exposure of those trees set out in the fall. In all of my planting last spring of some 4,000 or 5,000 trees, the loss was relatively high with the exception of the planting in pears. I had been getting my trees from a western nursery, which has agreed at least to give me their own growing throughout. In the pears the loss was not more than 1 per cent.; I think five trees out of five hundred were dead, but in the apples the loss was much greater. In one or two varieties, Grimes' Golden and Jonathan, the loss was as much as 25 per cent. In other varieties it was quite a good deal less. The interesting part was that it seemed to me up to the first of July that we were not going to lose the trees at all. The trees all started out leaves, but by the middle of July or the first of August we began to realize our loss would be heavy indeed. The roots did not start. They never got a hold on the soil. I think this experience has a bearing upon the paper.

A Member: Did you set those trees out with your own hands?

Professor Davis: No, not all of them, but I helped set some out.

A Member: Did you set them out dry, or did you puddle the roots?

Professor Davis: The earth was in good condition when they were set out, quite moist, but the roots were not puddled.

Professor Selby: I would like to ask Professor Davis whether he examined the condition of those trees during the period between the setting, and the time they appeared to die.

Professor Davis: Yes, I did. I examined them very frequently. I went over the trees, as I always do when I receive an order, and examined them carefully, stripped bits of the bark here and there, and I must confess I thought I had the best lot of trees when I received them I ever had received. The tops and all seemed to be in good condition.

Professor Selby: You say the trees that were planted in the spring were heeled in?

Professor Davis: Yes.

Professor Selby: And did you observe any tendency toward brown cambium before you observed they were dying?

Professor Davis: In the heeled trees, yes. In those heeled trees we picked out, I suppose, a couple of dozen trees out of three or four or five hundred Rome Beauties that were blighted with brown cambium, so that we did not care to plant them.

Professor Selby: That would seem to indicate that the injury was greater in the heeled in trees than was apparent, as I interpret it, that the trees heeled in really suffered more than they showed. The brown cambium might of course not be attributed to that, but there have been very many astonishing results in this study of the injuries to young apple trees. I would not have believed myself the statements that I have been forced to make as a result of the investigations, if they had come to me a year ago. It is of course a great shame that these results are so, but on Mr. Allen's ground—he had ten acres in Trumbull County, at a very high elevation in a region where all the peach trees under three years of age were killed by the October frost—ten acres of Northern Spy to be top grafted. He top grafted those this spring. When I visited there in early April we examined a great many, and did not find more than—I estimated 15 to 20 per cent. of injuries of trees injured as shown by the brown cambium, but when they came a little later to top-graft those I suppose the brown cambiuum ran up to nearly 60 per cent., and they found actually that many trees that appeared healthy had to be cut down to what was the snow line at the time of that frost, in order to get an area where the cambium was of the proper color, and where they could have an assurance of sound wood to do the grafting. I want to repeat briefly one point well to bear in mind with respect to this killing. This winter killing of whole orchards is but a repetition of what happened to Baldwins in Erie County in 1880 and 1881.

The Secretary: And Smith Cider, too.

Professor Selby: Yes, Smith Cider, too. If you bear in mind our conditions during the fall period of 1906 you will have the explanation. Excessive rainfall and excessively high temperature for August and September. Ordinarily the slowing down of growth, and the ripening begins in September, often earlier, because the temperatures at night begin to drop, and the plant begins to get ready for the winter, and in the presence of stimulating conditions as against the average slowing down condition, we have the great danger—and of course as one gentleman has pointed out, it is the tree that was growing fastest at the end of the season that would be in condition to be killed by freezing.

Mr. Pierce: These trees of Professor Davis' were not raised here, but in the West, where the conditions did not prevail.

Professor Selby: They probably did prevail there, because the conditions were general through the whole United States. I don't want to be misapprehended in connection with this. It is perhaps a passing condition. We won't have it repeated again, possibly in ten or fifteen years, unless these orchards are cultivated late with these types. Before closing this subject—I presume the Chairman is about to close it—I would like to ask the co-operation of a limited number of orchardists in this distirct in connection with the modified Bordeaux mixture.

A Member: I would like to ask this question, spoken of many times in institutes in this country, and that is when you set out a fruit tree, should you make a mixture of the natural dirt where the tree is to be set, and cow manure with water, and dip the tree roots into that before setting them out? They claim that trees set out that way are more successful than those set in the dry dirt.

Professor Selby: That is a common practice known as puddling the root, minus the cow manure. I haven't a judgment to render on it myself, but it is quite a common practice.

The President: We have with us Professor Gossard of the Ohio Experiment Station, the insect man, who will give his observations of the season.

Professor Gossard: Upon the program is another paper than mine, and while I do not know the nature of it, I am sure it is a matter of great importance to this society, and I therefore request that when I have read for fifteen minutes you let the gavel fall, and please limit the discussion to five minutes. I am doing that partly on Professor Green's account, and partly because I want to get away on the noon train.

The President: We have one hour and ten minutes, time enough for the two.

OBSERVATIONS OF THE SEASON.

BY H. A. GOSSARD.

The season opened with a noteworthy weather condition that seems to have had a perceptible effect on the development of San Jose scale. March 19th the mercury rose to 68 degrees at Wooster, and the following maximum temperaturs were recorded at this place during the next two weeks:

March 19th, 68 degrees; 20th, 67 degrees; 21st, 67 degrees; 22nd, 82 degrees; 23rd, 79 degrees; 24th, 74 degrees; 25th, 67 degrees; 26th, 70 degrees; 27th, 68 degrees; 28th, 67 degrees; 29th, 77 degrees; 30th, 67 degrees; 31st, 46 degrees.

April 2nd, the mercury was down to 15 degrees and, with the exception of seven nights, descended below freezing each night until the 28th, when a warmer period commenced. However, the mercury dropped to the freezing point or below it nine nights in May, the last freezing record being on the 28th. Unfortunately, no direct observations were made which definitely proved this weather condition to have been adverse to the scale, but for some reason the scale has not been very much in evidence the past summer in many orchards that promised a year earlier to develop severe infestation in the normal course of events. Because of this phenomenon, I have not felt warranted in drawing conclusions regarding the effectiveness of the Rex lime-sulfur spray, which I undertook to test. The most plausible explanation occurring to me to account for this condition, is to suppose that the extended warm period in March started the dormant scales into activity, and that the cold, freezing weather of April, following this warm period, proved fatal to them.

Some districts in which the scale has been controlled for three or four years with lime-sulfur spray, but were orignally badly infested, are now seriously attacked and threatened with destruction by the bark borer, *Scolytus rugulosus*. The district on the peninsula from Danbury to Marblehead is especially suffering, but all sections in northern Ohio that were once scaly, seem to be immediately or remotely threatened. I saw one orchard of young trees, four or five years old, at Longley, Wood county, which had never been very scaly, that was being badly attacked by these borers which had migrated from a nearby apple orchard that had been destroyed by scale. This orchard seemed a good illustration of this insect's disposition to attack healthy trees when its numbers have outrun the supply of available weakened trees. As a trial application I recommended to several correspondents to boil a thick lime-sulfur wash, using 20 pounds of sulfur and 30 pounds of lime to 50 gallons of water and add to this quantity of mixture, 3 pounds of arsenate of lead (or 1 pound of Paris green) and 6 to 8 pounds of fish-oil soap. This application was applied to the trunks and larger limbs with a spray pump or brush. I further recommended a liberal use of fertilizers around the diseased trees. Some of the parties who used this treatment report seeming benefit, but I have not yet had an opportunity to make personal inspection of results, and shall not feel warranted in drawing any conclusions until the test is extended over several seasons. One orchardist painted the trunks and limbs of his trees in early spring with Carbolineum avenarius and the benefit against the borers was apparent. I inspected his trees in early June, and at that date no great amount of injury to the trees from the application was perceptible; the counterbalancing benefits seemed to entirely outweigh the attendant damage. Extensive experimentation with this insect is urgently needed and will be undertaken this coming spring.

The spring opened very late, so that the first spraying for codling moth fell about the first of June in northern Ohio. This period was very wet and quite cool. For test work I made use of a 12-acre orchard near Amherst, located about 10 miles from the shore of Lake Erie, and hence not damaged much by frost. One-half of this orchard consisted of Baldwins and the other half of Ben Davis. I tested the coarse, driving spray, as used in the western arid states, by enlarging the orifices in Vermorel nozzles, and also used the medium caps for comparison. Three pounds of arsenate of lead were used in 50 gallons of Bordeaux—the Bordeaux formula being 3 pounds of copper sulfate and 6 pounds of lime. The trees averaged 20 feet or more in height and had a corresponding spread of top. One plot was treated with 1-3 pound of Paris green to 50 gallons of Bordeaux. About one gallon of soft, home-made soap was added to each 50 gallons of spray for most of the plots. Acting upon a suggestion made by Prof. Selby, one plot had 2 pounds of copper sulfate and 1 pound of iron sulfate applied to it, instead of the regular Bordeaux formula. About 100 pounds pressure was maintained by the pump. For the purpose of better directing the spray, two small pieces of 3-4 inch gaspipe, about 4 inches long, were threaded at each end, and after being bent about 25 or 30 degrees from the horizontal, one was attached to the end of each rod by means of a gas coupling and the nozzles were then attached to the bent pipes. The spray was directed downward and inward and was used until the trees dripped. On trees 20 to 25 feet high, with corresponding spread of top, from 7 to 8 gallons of spray were used. The second spraying was made about 10 days after the first and in the same proportions, only the copper sulfate was reduced to 2 pounds for 50 gallons of spray. But little more than one-half as much spray was used in this application as in the first spraying. The third spraying was given to part of the orchard about the middle of July. Arsenate of lead alone was used for the July application, the Bordeaux being omitted. Not more than three or four gallons of spray were used on the largest trees for this application. As the full results of the test will soon appear as a station publication, I will not enter into further details, but state results and conclusions. An average of over 95 per cent. of the picked apples on the sprayed trees at harvest, including those sprayed once, twice and three times, were free from worms, while the same average for the unsprayed trees was less than 58 per cent. A record was kept of the dropped apples under certain trees, beginning with the 30th of July.

The following table shows the average record through the entire season for the different treatments:

	Per cent. sound	Per cent. wormy	Per cent. damaged by curculio
Sprayed 3 times	98.14	1.10	.71
Sprayed 2 times, early	97.69	1.16	1.16
Sprayed 2 times, one early, one late	92.00	5.70	2.55
Sprayed 1 time, early	91.60	6.50	2.65
Sprayed 1 time, late	61.50	11.96	25.07
Unsprayed	45.80	46.30	16.30

Some interesting data regarding the records of single trees are given in the following table:

	Per cent. sound	Per cent. wormy	Per cent. damaged by curculio
Best record 3 sprayings	99.19	.64	.16
Best record 2 sprayings, early	98.68	.74	.57
Best record 2 sprayings, one early, one late	97.35	1.32	1.34
Best record 1 spraying, early	96.91	2.08	1.02
Best record 1 spraying, late	91.10	7.72	1.23
Best record unsprayed	77.42	14.53	9.63
Worst record 3 sprayings	96.48	1.59	1.95
Worst record 2 sprayings, early	96.58	1.87	1.56
Worst record 2 sprayings, one early, one late	78.44	17.04	5.45
Worst record 1 spraying, early	88.32	9.00	5.40
Worst record 1 spraying, late	31.91	16.20	48.90
Worst record unsprayed	17.90	73.14	33.33

I decided that ordinary Vemorel nozzles with medium caps gave the best spray at 100 pounds pressure; that the little crooks were of decided advantage in directing the spray and therefore conducive to economy of materials; that three sprayings gave slightly better results than two; that the first application just after blooming should be heavy to secure immunity from worm attack; that in cold, wet seasons, such as the past spring, considerable russeting follows a heavy spraying; that less russeting occurs on fruit sprayed when it is a week or ten days old than when it is younger; that russetting would probably be reduced by omitting Bordeaux from the first application, using instead arsenate of lead with lime added, but this question needs further testing; that an application for the second brood should be made by July 15th, or earlier in northern Ohio; that soap or other stickers do not appreciably enhance the value of these sprays when used on apples; that at least one pound of iron sulfate can replace one pound of copper sulfate in a 3-6-50 Bordeaux formula without injury to foliage or fruit, but I have not yet decided as to whether this mixture is an improvement on the ordinary Bordeaux.

The variegated cutworm, *Peridroma saucia*, was quite destructive in some localities, and if conditions are not unfavorable for its development, it will probably do a large amount of damage the coming year, for it is very plentiful over all northern Ohio. It attracted special notice at Sandusky, where it had attacked gardens, lawns and greenhouse products. Poisoned bran mash is useful against this species, as is also spraying with arsenate of lead when practicable. Hand-picking at night by means of lanterns is useful in greenhouses.

The radish maggot, *Pegomya brassicae*, was not so destructive as in some former years. I have not made very satisfactory progress against this pest, though I have, through two seasons, tried about all the known remedies. Mr. Geo. E. Hartung, of Sandusky, a market gardener who has suffered much from the insect in former years, reports practically no injury this season, and believes his immunity was secured by overhead irrigation, since his neighbors suffered as in other years. Mr. Hartung's pipes are about eight feet above the ground, 36 feet apart, and the jets from the pipes are 4 feet apart. This result, and the attendant benefits of irrigation, seem to make this treatment worthy of testing by large market gardeners. For the ordinary kitchen garden the most satisfactory treatment tried by me, from the viewpoint of good, healthy radishes, reasonably free from maggots, was a liberal application of tobacco dust every five or six days during the growing period, commencing as soon as the plants were through the ground.

The grape-berry worm has decreased considerably in the grape region along the lakes, but has become more injurious in the interior sections, where the small home vineyards are found. I repeated the experiments recorded in Circular 63, getting practically the same results. We used a traction sprayer fitted with 10 nozzles and throwing about 170 gallons of spray per acre. A double application with this machine—the Wallace—was very nearly equal to thorough hand work. A check row that was sprayed three times with Bordeaux, containing no poison, had 58 per cent. of the berries wormy and yielded marketable fruit at the rate of 1,798 pounds per acre. One-half of this check row was sprayed by hand with arsenate of lead in Bordeaux, with a resin soap sticker added, during the latter part of July, and this half of the row had 2.9 per cent. of wormy berries and yielded marketable grapes at the rate of 5,608 pounds per acre. This plot had the lowest percentage of wormy berries of any in the test, but lost too many young grapes in the early part of the season to equal in total harvest some of the plots that received earlier applications of poison. This plot proved, however, that the late July spraying is the most important of all, and that the later broods of the worm must be killed or comparatively little benefit will be derived from the earlier applications. This result is a repetition of the experience of last season regarding the late spraying. A plot hand sprayed three times with Bordeaux, arsenate of lead and resin soap sticker had 3 per cent. of wormy berries and yielded at the rate of 6,031 pounds of marketable grapes per acre. The grapes of this plot had too much spray adhering to them at harvest time, and it will be necessary to sacrifice some grapes rather than send them to market in this condition. A plot sprayed three times with the same ingredients by the double machine plan had 4.47 per cent. of wormy berries and yielded 6,067 pounds of marketable grapes per acre. Three sprayings of arsenate of lead only, without a soap sticker, double machine application, gave 8.57 per cent. of wormy berries and 5,654 pounds of marketable grapes per acre. Three sprayings of Bordeaux with arsenate of lead and resin soap added to the second and third applications, double machine plan, gave 4.8 per cent. wormy berries and harvested 3,864 pounds of marketable grapes per acre. The same ingredients applied at the same time as in the preceding case, but with single machine instead of double machine application, gave 20.34 per cent. wormy berries and harvested 3,465 pounds of marketable grapes per acre.

The double machine applications, if made three times with soap stickers, gave almost as good results as hand sprayed plots and were more presentable for market. It is quite conceivable, however, that if little rain were to fall in late summer, grapes treated in this way might carry too much spray to be presentable in appearance or safe to use in large quantities at harvest time. One plot was treated with a Bordeaux made of 4 1-2 pounds of copper sulfate, 3 pounds of iron sulfate and 6 pounds of lime, with 3 pounds of arsenate of lead added. This made a spray that had good sticking qualities and yet washed off quite readily by rain. Three sprayings, double machine application, with this mixture, gave 10.18 per cent. wormy berries and 5,760 pounds of marketable grapes per acre. This treatment seemed quite satisfactory for the fruit, but threatened to eat the galvanizing from the iron wires supporting the vines, thus shortening their durability by more than half. Parasites are appearing freely over the infested vineyards and doubtless are contributing to the suppression of the worm.

The greenhouse white fly has become established in many greenhouses and we have a good many inquiries regarding the process of fumigation with hydrocyanic acid gas. The fall web-worm was abundant last year, but has been much more numerous the present season. Park superintendents and many orchardists have been obliged to wage systematic warfare against it the past season. The black walnut caterpillar, *Datana interrigma*, has been very numerous for two seasons, and many trees are threatened with destruction by it, having been completely defoliated for two years in succession. The white marked tussock moth has been extremely abundant in city parks and was the subject of many inquiries. The terrapin scale, *Eulecanium nigrofasciatum*, has been our most serious scale insect on maple trees the past season. The remedies usually recommended—namely, the kerosene emulsion and the lime-sulfur wash in winter—have not given very good results on terrapin scale where tried by the station.

A rather extensive test against the peach borer was tried in a young orchard, but partially failed to yield results because of the scarcity of borers, even on the check trees, and of course, full returns cannot be had until spring. I decided, however, that the use of building paper or other protectors of like character around the trees for a period sufficiently long to be of effectual use in preventing egg-laying, was more undesirable than injury by the borers, while various sticky and poisonous mixtures were of questionable utility. Mounding with earth seemed among the best remedies, but by all odds the most satisfactory treatment from the standpoint of the trees and borers combined, was tying tobacco stems loosely about the base of the trunk and suspending them from a point about 12 to 18 inches above the ground. Prof. Slingerland gave a very good report of this treatment several years ago, but did not specially emphasize the splendid tonic effect it exercises on the trees. This treatment seemed to more than pay for itself without any reference to the presence of borers, while at the same time it possessed good value in this respect.

A Millipede, one of the Polydesimidae, became very numerous in the station greenhouse this fall, occurring by tens of thousands in a bed devoted to forcing cucumbers. A few vines were killed before the insects attracted notice. The men in charge used a plentiful supply of tobacco dust as a mulch about the bases of the vines and also mixed more or less of the dust in the soil, with the result that hundreds of dead worms could be found at the base of each vine a few days after the application was made, and tens of thousands of them dropped from the beds to the stone floor beneath, where they died. This remedy was a speedy and complete success.

The raspberry flower beetle, *Byturus unicolor*, became very injurious at North Olmsted, Cuyahoga county. One berry grower, located there, reported a loss of from $500 to $800 through its depredations. It is a very small, yellowish-brown beetle, densely covered with short, silky hair. It has the habit of eating holes into the swelling flower buds and also of devouring the petals and essential organs of the flowers after the latter have opened. The larvae are small, white grubs, said to be found in the berries at picking time. We believe that thorough spraying with arsenate of lead by means of a vineyard sprayer while the buds are swelling, and again while the blossoms are open, will control the pest satisfactorily. We shall try this procedure with it this spring.

The catalpa sphinx was the occasion of a few inquiries. So far as can be ascertained there are only two annual broods of worms in Ohio, the first appearing in June and the second in August. In August, 1906, I applied either Paris green or arsenate of lead to all of the infested trees in a badly infested grove, and within a day or two all of the worms were dead. I can make no estimate as to the number killed, further than that there were many thousands. No worms were seen in this plantation the past June, so the owner reports. Nine out of six hundred trees were attacked in August, and these were quickly cleared of the worms by spraying. It seems, therefore, that spraying is not impracticable against this insect, even in a large grove, if the trees are carefully watched and sprayed as soon as the worms appear.

For several years the growing terminals of catalpas have been attacked by an insect, the larvae of which appear in July and may be found as late as October. From an examination, made in the spring of 1907, of all the twigs on 15 three-year-old trees growing at Wooster, 49 per cent. of them were found to have been damaged by this pest. When attacked, the twigs become slightly swollen and blacken at the point of injury. This blackening usually extends 3 to 4 inches below the tip during the early part of the season and a lesser distance down at a later period when the twig is growing less rapidly. The injured portion of the twig dies. Following the death of the tip in early summer, the next node below develops one or more tips and frequently a cluster of leaves, giving the twig a bushy growth. The ultimate result after continued topping is a stunted, crooked, forked growth. The questions relating to this trouble were referred to Mr. J. S. Houser for special investigation. He succeeded in hatching two different species of insects from the infested tips; one a midge, seeming to agree with the catalpa seed midge, *Cecidomyia catalpa*, the other a chalcid, pronounced by Mr. Crawford of the Department of Agriculture, to be a a new species which he has named *Zatropis catalpae*. Whether these chalcids are parasitic on the midge larvae or whether, like the wheat-joint worm and a few other species of the same family, they are primarily injurious to vegetable tissue, I cannot at present say. The exact part played by each species in connection with the trouble still remains to be determined. I am not able to offer any suggestion in regard to remedies.

Mr. Montgomery: Do you think machine spraying as efficient as hand spraying?

Professor Gossard: In our work we get pretty nearly as good results as from the best hand spraying we could do. You see when you have a machine that has five nozzles on a side, and throws 170 gallons to the acre, and you go down one row and up the other, and put on 170 gallons to the acre, it has force enough to shoot the leaves out of the way clear over two rows beyond, and it is pretty nearly as good as by hand.

The President: How about the quantity of liquid used by hand or by power?

Professor Gossard: We would use a little bit more; by hand it would be a little bit more.

Mr. Montgomery: I thought it would be pretty difficult to do the work by hand. The object is to get it to the branches.

Professor Gossard: Yes. These Wallace machines spray with great force.

The President: Question No. 20, "Why was the percentage of wormy apples greater than usual this year?"

Professor Gossard: The frost killed the apples, but the frost did not kill the worms, and while in ordinary seasons you would have two apples for one worm, this year there were about six or ten worms for one apple.

Mr. Davidson: I would like to ask Professor Gossard the best remedy for curculio on peaches?

Professor Gossard: It is pretty hard to answer that question. The poison sprays of course are good so far as they can be used. Peaches will not stand excessive spraying, but a spraying with arsenate of lead and bordeaux just after they come out in leaf, and then one or two sprayings after they get in bloom, say about ten days after the bloom falls, and perhaps two weeks or a month later, will help. In orchards that can be cultivated, plowing them out in the latter half of July or August, keeping them sprayed at that time will break up the pupae cells of the curculio, and that will also be a help.

Mr. Davidson: Would plowing in the winter, turning them out in the winter, have any effect on them?

Professor Gossard: That would have practically none. Most of them have left the ground before winter and are hibernating.

A Member: Does the peach scale ever work on apples?

Professor Gossard: I presume you mean the soft leucanium scale without the shell?

A Member: They have a shell. I sent some specimens to the station and sent me word that they were a peach scale, and there is a sooty deposit on the limb.

Professor Gossard: I think it is leucanium. There are several of those. That name is applied to several of them.

Mr. Bassett: Isn't that the same one that is called the apricot scale?

Professor Gossard: Yes, there are three or four specimens of these leucaniums that go for peaches and apricots indiscriminately. You ask are they injurious to apples? No, practically not; not seriously so. I have never seen apples damaged by them to any extent. I have seen twigs that had on them some leucanium, but I do not at the moment recall having had a single specimen with those that commonly infest the peach. They may, however, be on record.

A Member: What have you to suggest now as to the use of copper sulphate with the lime and sulphur? What benefit is there in adding the copper sulphate to the lime sulphur water?

Professor Gossard: So far as our experiments have gone, we do not think it worth while to use it. We think the lime and sulphur is sufficiently good as a fungicide during the winter season, the time it is used, so that there is no need of putting in the bordeaux, and the time for using that is later.

A Member: I would like to ask you along another line. We haven't found yet any remedy for the little striped bug that attacks the cucumber and melon?

Professor Gossard: No, sir, there is no very satisfactory remedy. I used an abundance of tobacco dust around them when they were coming up.

Mr. Shirer: Have you any remedy for the blister beetle on asters?

Professor Gossard: I myself have not had satisfactory results with it. The superintendent of parks in Cleveland told me he used Cayenne pepper, and got good results.

The Secretary: There seems to be a little misapprehension in regard to our program. Some of us seem to have gotten the understanding that we close this afternoon. If you will look at your program, you will see that one of the best sessions is for tonight. Mr. Horvath, who was to be here last night, sent me a telegram that he had been detained by illness, but that he would be here tonight. Those who know about his work know that he has no superior in his line. Mr. Root also will talk to us a few minutes in regard to bees with relation to horticulture. How can we ask these men to come and address us when we have only a few of us here as an audience? I cannot do that. I cannot ask them to come again. We come here to get the benefit of these meetings, and we ought to stay until they are through with, and not run away and give these men only a handful to talk to. I would like to call attention again to the spraying exhibit. I am glad some of you have seen it. Those men came here at an expense, and I know you want to see their display. You know it is in the basement of the State House. I have some reports of the Missouri Society available for the members as far as they will go, and also some of our last year's reports for you who have not received them, or who will take them to your neighbors who have not received them.

The President: We will next have a paper by Professor Green on "Plans for Co-operative Horticultural Work."

PLANS FOR CO-OPERATIVE HORTICULTURAL WORK.

W. J. GREEN.

There are many lines of experiment in horticulture where the work requires much duplication, not only in one but in several localities.

This is due to the fact that soil, seasons and treatment all exert influences to cause variation in results. We must get averages, in many cases, rather than exact results; in fact, the greatest error that the inexperienced are apt to fall into in interpreting results of experiments is that in a desire to be exact, they concentrate their efforts upon weights and measurements in a single case, thinking that because of the care taken the facts are to be relied upon.

While careful work is essential, much of it is required to secure reliable data. Not only is this true, but aside from the evidences of tape and balances, judgment must often be used in the interpretation of averages.

There is, then, abundant reason for carrying certain lines of experimental work on outside the station. Averages of many experiments are not only needed, but the judgment of the practical man is helpful. Added to this is the demonstration of any fact in the neighborhood where the work is done.

It is true that there is often disappointment because the matter which was supposed to be demonstrable refuses to be demonstrated. A case in point may be cited where a successful grower had settled in his own mind just what particular plant food element was of most benefit to a certain crop on his soil.

The fact that he had been manuring heavily with stable manure seemed to cast a doubt upon the accuracy of his trials. A careful experiment failed to demonstrate the fact which it was planned to show. Unfavorable weather often annuls the work, but the results are not always without value.

Regarding fertilizers there are several questions which are often asked by fruit growers. On the islands of Lake Erie it has been the custom of many grape growers to till the land between the rows during the season. Clean culture has been practiced for many years and but little plant food or humus returned to the soil.

The practice has not been disastrous, but it seems like a questionable method.

With the light which we have already it may seem to be easy to tell in advance what to do. It would be easy if we could safely assume that the only trouble is that the supply of plant food is getting low.

Then we would simply be required to determine which element or elements are depleted.

The humus factor is to be considered, but how to restore what has been lost is a greater problem in grape culture than with most other crops.

There are peach orchards in this region where the same questions arise, and another of a broader scope; namely, that of winter killing. These problems cannot be solved except on the spot and by considerable duplication.

We have not been using fertilizers to any extent in fruit culture of any kind. The example of some of our eastern neighbors makes us doubt if we are doing as well as we might in this respect.

We have always been told not to use much nitrogen on fruit trees, but we are wondering if the saving of moisture is the only good accomplished in mulching; also if there is any advantage in the use of legumes in cover crops. We need to know also if lime may not be beneficial in some cases where leguminous crops do not flourish. Experiments made elsewhere show the value of potash on fruit trees and we do not know but there may be such soils in Ohio.

There have been a number of successful attempts in mulching apple orchards and we would like to know what the limitations of the method are, not only as applied to apple trees on different soils, but as regards all kinds of fruit trees.

All of these problems require co-operative efforts for solution and there ought to be at least five each of fertilizer and mulch tests in different parts of the state.

There has been much discussion regarding the advisability of using fillers in an apple orchard, but another plan has been tried which seems to offer a suggestion, if not a solution, as to the best method of getting maximum yields very early in the life of the orchard. The plan is to use one variety only, taking a precocious sort for the purpose and planting closely.

The Wealthy has been planted 10 by 10 feet and has given very satisfactory returns at an early age. Close pruning must be practiced and thinning as soon as need to be. The life of such an orchard might be comparatively short, but there would be no idle trees. Most likely the mulch method would be adapted to this way of planting.

It would also be worth while to plant some dwarf apple orchards, largely for the reason that the interest in fruit culture by amateurs is increasing and we need to know more regarding the possibilities in this direction.

In fact, in all lines of fruit culture there ought to be more attention given to the needs of the owners of home gardens.

In all of this co-operative work the needs of private as well as commercial growers should be kept in sight. In no line would this hold good more than with varieties.

Anyone who has given any attention to new varieties must have observed the fact that varieties are considered mostly from the commercial standpoint.

Most varieties are measured by that standard and they stand or fall according to whether they are profitable market sorts or not. This tendency to commercialize fruit growing has been growing almost up to the present time. It is a fact that, owing to fruit tree pests, many have become discouraged and the home orchards and fruit gardens have shown neglect. More and more has fruit growing gotten into the hands of professionals.

But little has been done to check this tendency and there seemed to be no use in trying to do so, especially when so many were saying that it is cheaper to buy fruit than to grow it

There is, however, a new element, or rather an old one that is taking on new life.

The trolley lines are making it possible for many city people of moderate means to get out a little distance into the country.

Our correspondence at the station shows that this class is likely to become a live factor in fruit culture. There are two things which ought to be done for these people, also for that class of farmers who are finding that buying fruit for home use has its drawbacks, even from the financial side.

They ought in the first place to be helped to see that the fighting of insects and diseases is not such an unequal warfare as it seems to be. It can be done with some profit and a great deal of satisfaction, even in the home garden. The chances are not all against the small grower. In the second place, they ought to be helped to a better knowledge of varieties which are suited to their needs. This is important because success in amateur fruit culture lies largely in the satisfaction in being able to produce something of finer quality than the market affords, and better also than the commercial growers in the neighborhood are producing. When such people learn that they can grow something which is not in the same class as that which they buy the cost will not be thought of. This alone will inspire enthusiasm and insure success in amateur fruit culture. We have all been thinking of market varieties almost altogether.

The choice sorts for home use are not unknown, but we have not been giving much attention to their behavior on different soils, nor have we the real intimate knowledge of them which we need. There ought to be a number of variety tests orchards in the state. We ought to be keeping closer watch upon new varieties that are likely to prove profitable for market. It is too slow a process to test them at the station and branch stations, nor is this plan adequate. Put more of these orchards where the people can see them and where they can judge as to adaptability as compared with their own.

Market sorts must not be given exclusive attention, nor even the greater part.

Years ago it seemed to me that the time might come when we could, and ought, to drop the variety question. There seems to be no disposition on the part of the people to let us drop it. It needs to be put on a different basis and do more rather than less for it.

At least one feature not hitherto given much attention ought to be made a part of variety work. This is plant breeding. We have by no means exhausted our resources in the improvement of varieties of fruits. Before one can do much to improve any class of fruits he must study the varieties of that class.

Much of this work in plant breeding must be done at the station or by men who have a love for it, and when the results of improvement are sufficiently advanced, let these co-operative workers be given the material to test. Since there can be no royalty on improved varieties of plants, there ought to be some way to help workers along such lines. Possibly it could be done by co-operating with them, but at any rate pains ought to be taken to help rather than to hinder such men. We ought also to enlist the service of those who regard high quality as of prime importance. All of the work ought not to be in the hands of market growers. In such work the man who does it is of great importance, not that it is all to be left to him to make reports, but he needs to be an enthusiast of good judgment.

Nut culture has not been developed in this state and it is time to begin the work. Whether it can be developed commercially is a question, but that there is abundant chance for improvement is beyond question and it might be made a feature of the home garden work.

Our native nuts may be improved and we may find that the pecan and English walnut will thrive in some parts of the state. The chestnut seems to have a very limited range, if we may judge of what we see of it in nature. Trees of our native chestnut have been planted and have produced crops on what we term limestone soil, and it is worth while to try it in all parts of the state. The Paragon and some of the European sorts are well worthy of our efforts to cultivate.

All possible lines of co-operative work are not here included and some may think that the most important of all, that of spraying, has not been mentioned; but this outline was not intended to be exhaustive. It is suggestive simply. If the station is to finance the work it may be asked why bring the matter before the horticultural society? The reason is that the men who are doing the work ought to come up here every year and make reports of progress. There are reasons why this would be a good plan for the station as well as for this society. Not only should reports, but exhibits be made, both here and at the state fair. The usefulness of the station could thus be greatly increased. Much of the material could not well be published by the station, nor could it all be used by this society, but a great deal of it could.

The station and society can work together in this matter, in fact, both are needed in order to carry out the plan sucessfully.

Professor Lazenby: I hope there will be some discussion of this very admirable presentation by Professor Green. I should just like to say one word. As he stated, there are two distinct classes of workers in horticulture. One might be called the breeders; that is, men who work along strictly scientific lines to improve the inheritance of plants. The others are the practical growers, who are especially interested in the question of environment and soil conditions, and things of that kind. Now there is no reason why these two should not work along together, and just as Professor Green has stated, I think we must depend very largely on the individual grower, and the more of these co-operative experiments we can have, the better it will be for all concerned. As far as strict breeding is concerned on scientific principles, I think most of that, perhaps, must be in the hands of specialists at the station, and at institutions where they have the means and time to carry it out. The improvement of a horticultural crop depends upon these two things, heredity—that is, the influence of the ancestors; that is all we mean by heredity, parents and grandparents—and the environment. One difference that we sometimes overlook is that principles of heredity work without expense. It costs something to have investigators along that line, but after we have once got this principle established in a variety it continues without expense; environment, however, is expensive. It takes a good deal to drain our ground, and apply fertilizers, and it is to a great extent temporary, but inheritance is for all times and for all places, and so the two of course, are very important.

Mr. Shirer: All hail to the city farmer. [Laughter.] Many slurs are cast on him, yet he is doing wonders. [Laughter]. Now I am sincere in this. There are many good city farmers that are doing much good for us all. For instance, Mr. Beaver in our section has done wonders for us. Those men are starting out buying farms, and they are well to do, and have plenty of money to spend in making experiments. Another thing I wish to say. I am surprised at the talk that chestnuts will not grow on limestone. I, as a boy, gathered plenty of chestnuts, and there were plenty of stone quarries all around, and I suppose that makes limestone soil. I mean limestone quarries, and we had other stones, but they did grow there in abundance. I know I gathered some from the edge of a good limestone quarry.

Mr. Shively: The suggestion has already been made by Professors Green and Lazenby in regard to the co-operation by horticulturists throughout the State, and it is a good one. Any of us that have the work at heart can work out an experimental test in a way, and perhaps it may be of great value, not only to the horticulture of the State, but some of our investigations and experiments may add new light to the work of the experiment stations. I believe we should get down to business, and select our experimental plots in our orchards, or that the State should designate certain localities, and make a kind of sub-experiment station of them. It is these experiments carried on in such a way that will make our report valuable.

The Secretary: I think we all see the value of experiments of our own, and realize that they are crude and slow, and incomplete and expensive. If we can co-operate and work together on different lines under the scientific direction and guidance of the Experiment Station, I know we will be immensely benefited, the experiments will be better directed, we will not be duplicating work to any unnecessary extent, and the experiments will be adapted to the different localities. I am satisfied that the result will be of immense value not only to the farmers and fruit growers of the State, but of other states, also, and the Experiment Stations will also be benefited by them in its work.

Mr. Pierce: The United States Government has been running a co-operative experiment station for a good many years. They send out seeds. [Laughter.] This is not to laugh at. I don't get up here to be laughed at. [Laughter.] I think the persons who laugh the most and make the most objection to this government seed distribution have never used one of them. I don't know a man that has ever made a report back to the government. [Laughter.] Every package of seed that is sent out requests you to report the success that you have had with it. I have had very good success myself with these seeds. They are a common kind, of course, but as far as growing, and being the right thing is concerned, they are very good, and it is on the co-operative principle, and it shows just how much people are willing to do for nothing. They don't do anything. In a body of men like this you might find some willing to co-operate, but take the rank and file and they would not do it, and if they did, the experiments would not be worth much.

Mr. Riggs: I would ask if the plan submitted by the Committee of Horticulture, which met at Amherst, is to be presented to the legislature in its budget?

Professor Green: It is. That includes this.

Mr. Riggs: Then it seems to me that we as horticulturists, and as we have representatives and senators here, that if everyone of us would take a little interest in that, and confer with our reprsentatives and senators personally, or write them, and ask that or demand that we get an appropriation sufficient to cover the things represented in the budget, that we would have great influence in getting something that would help us, and give us a start along this line presented by Professor Green.

Mr. Montgomery: For fear that some might think that these co-operative experiments might be something like the free distribution of seeds by the United States Government, I wish to say that no such plan is under consideration at all. This contemplates the distribution of certain seeds and plants to certain horticulturists in certain localities, but under supervision. There is no supervision by the United States in connection with this distribution of seed. It may be of account, and it may not, because they do not know that you are able to interpret what you will work out. To illustrate that we came here yesterday, and you notice the controversy that took place here about certain varieties, and what localities produced and certain hillsides and slopes. There was quite a controversy. Now, how can we reconcile those different ideas? We cannot, because I do not know your conditions and your soil, and all the surroundings, but if this is under the supervision of an expert who can study your soil conditions, and see why you develop certain conditions at your place that do not correspond to what are developed at my place, then he can explain why those differences occur, and with the data thus secured work out some valuable results. As far as some of our discussions yesterday were concerned, when they go to the public they will fall for nought, because they will say that one man said so and so, and this man got up and said so and so, and it amounts to nothing. So we want that kind of supervision, and not the supervision that the United States gives with its seed distribution.

Mr. Pierce: I am not opposing the idea, but there are some difficulties in the way of making this of any practical use. Suppose six or eight of us report on the Stark apple, as we reported here yesterday. Is it going to help the matter any? I know and two or three others know that the Stark apple is profitable, as the discussion developed yesterday. Now, are any more experiments along that line going to help us any? We are all experimenting. Every spring and summer we all make experiments, but I can't exactly see how it is going to benefit the public after all.

Professor Davis: Just a word in regard to the Stark apple. It will apply in all other respects to other varieties of fruit as well. An unfavorable report on any variety for any one locality is not a condemnation of that variety at all. It is simply stating the limitations of that variety, and that is just what we are trying to find out, the limitations of these varieties, whether they are adapted to certain localities or not adapted to certain localities, and this work would, I think, along that line be very valuable. I don't want to appear as opposing this plan of Mr. Green. I have lots of confidence in him and his judgment, but I want to find out what is in it, and I don't know but that good results could be obtained from it.

Mr. Peterson: I would like to ask something about the Stayman Winesap? I am growing some in what we call a clay limestone loam. They have been fine in quality, but this year and last they have had a tendency to crack just before they ripen. That is an abnormal condition I know.

The President: I will say for this co-operative work that it is undoubtedly beneficial. As to the Stayman Winesap, I do not think the condition you mention is the normal condition.

The Secretary: I would request that whoever has papers and addresses will hand them in to me at as early a date as possible.

ASSEMBLY ROOM COLUMBUS BOARD OF TRADE.
JANUARY 17, 1908, 1:40 P. M.

Meeting called to order by the President, Mr. Cox.

The President: We will now, while the other members are coming in, have some of our questions answered. We will first take up No. 12, "What is the best form of power sprayer?" This is to be answered by Mr. William Miller.

Mr. Miller: I cannot answer that. We are still crying for a better one. In the peach orchard the compressed air sprayer is coming more and more into vogue, and is very popular. I am planning to use that in my own orchard this spring. While we have a good gasoline outfit, there are objections to that, as there are to every form of sprayer that I have yet found. The greatest objection to the gasoline outfit, I find, is the severe strain on our morals in operating it, and further than that there is a labor question connected with it, the necessity of having a pretty good engineer at the spraying plant where we are cooking and preparing the spray, and another one that has mechanical ingenuity enough to run the apparatus in the orchard. We can eliminate one of the experts, and do it with the common, cheap labor with the compressed air sprayer. Our orchard there is level country, and we make the tanks to hold about 120 gallons, and the air tank about the same size. It is a question whether that is the better stunt, or whether we should use smaller ones with one horse. Mr. Loop, of Pennsylvania, uses the 60-gallon altogether, and hauls to the orchard with a one-horse rig, while we use a two-horse rig with two tanks, and with one of them filled with liquid it makes a heavy outfit.

A Member: How do you compress your air?

Mr. Miller: By using an air compressor with power from steam or gasoline engine. We are undecided whether to use a gasoline engine or an electric motor.

A Member: Doesn't it cost a good deal of money to install a plant of that kind for that kind of a sprayer?

The President: Yes, that is the worst feature of it.

A Member: How cheap can you get the machinery for compressing the air?

Mr. Miller: It depends upon the size of the compressor. There is one man near us who has a compressor which cost $55, but they complain that it has not quite capacity enough. We have ordered one larger. I think the price is $85.

A Member: Will you call for question No. 13?

The President: Yes, we will now have question No. 13 answered by Mr. W. E. Evans, "Are any of the newer nozzles preferable to the Vermorel?"

Mr. Evans: I think that question will be thoroughly discussed by the old fruit growers. Of course every catalogue you take up purports to have a better nozzle than the Vermorel. Whether they are better or not is a question.

Mr. Gill: I would like to say that we have used the Vermorel nozzles for twenty years, and we cannot find anything better.

The President: I have usd the Vermorel since I began spraying. I have tried several other kinds, have tried the Mistry and we have tried the Friend nozzle this year, and I like it pretty well, and some prefer it, and think it is better than the Vermorel, but I did not think it was. I do not know whether it is better or not; some of you may think it is and some not. Our men liked it very much.

Question No. 1, "Is it advisable to top work tardy bearing, but valuable varieties (such as Spy, for instance), onto other trees, and if so, what varieties are suitable for stocks, and what is the best age at which to top graft?" W. J. Green.

Question No. 2, "Is it advisable to plant Spy or other hardy varieties, and top work to the desired varieties in starting an orchard?" W. W. Farnsworth.

The Secretary: I suggested to the President that he wait before considering that until Professor Green came, and then consider both of the questions together. I put those questions on the list, because I knew a good many wanted to know about that, and I was one of them. For a number of years I have been starting my orchards in the main by planting out Northern Spies two or three years old, and have deviated a little from the practice of some men who advise waiting one year before grafting. I have planted in the early spring or fall and grafted immediately. I have found where the conditions were favorable so that they started to make a good growth, we got good stands of scions and good, vigorous growth. But whenever for any reason the tree was injured, or the weather was unfavorable, and the sap did not circulate freely, there we got a poorer stand of scions, and in that case we would replant the next year, and graft, or if the stock sprouted up and gave us good, vigorous shoots, we would put buds in. The theory is that the Spy gives us a splendid root system. In our part of the State it is perfectly vigorous and gives us a good root system, and a good trunk, and the advantage of the top working with selected scions from the best trees that we have, is in being sure of our selection, and if there is any advantage of securing the best strains, we have that advantage also. As nurserymen and other men know, you may grow 1,000 seedlings from crab seeds, select 500 of those trees, and on them put a small piece of Northern Spy scion, for instance, and on the other 500, say you put scions of Rambo. Let them grow two or three years, and take them up, and you throw a cover over those tops, and every nurseryman can tell which are Rambos and which are Spies, simply by the looks of the roots.

In other words, this small piece of scion that you have put on these roots have remodeled or entirely changed the manner of growth of the roots. It would seem from a thoroughly established Northern Spy grown for two or three years, and top working it to Jonathan, there might be a tendency to change this Spy root and stock to Jonathan. That is one of the reasons why I secured the promise of Professor Mally to give us a paper on "Interrelation of Scions and Stocks," because I knew he had made it a special study under Professor Budd at Ames, Iowa, and had made it the title of his thesis, and had seen something about its workings in Australia and in Africa. In Australia, you know, there is a law forbidding the use of anything but Northern Spy for stocks, on account of its freedom from aphis. But I have not been able to get his paper here. Whether there are advantages or not I cannot say, because my trees have not yet, many of them, got to bearing. Some have. I have trees planted six or seven years, Jonathan, Transparent (which is a precocious bearer anyway), Chenango, Strawberry, Duchess, and I think one or two others, which would seem to point to early productiveness, and the orchards are growing very vigorously, which would be of course against early bearing. While my experiment is not all concluded as yet, it points to good results. Of course in the case of the Jonathan or varieties not commonly grown in the nursery, we secured double advantage. We get a strong tree, and we are sure of getting what we desire. I had that illustrated forcibly this last year. I rented from a neighbor a ten-acre orchard with a good list of varieties, and he had paid considerable attention to the matter, and when it came to bear he found that the trees planted as Starks were Winesaps, which are of no use whatever in our part of the country, and the ones planted to York Imperial are doubtful, meaning a considerable loss to him. That we will reduce by top working. Perhaps the other question Professor Green has to answer is more important. It was impressed upon me this fall by the fact that we had an unusual crop of Northern Spy apples bringing good prices, and it occurred to me that any way by which we could shorten the period of waiting for the Spy, which is usually twelve or fifteen years, as was brought out here in discussion, if we could shorten that on trees of six, eight or ten years bearing other varieties, it would be good for us to know it.

Professor Green: I am afraid in regard to question No. 1 that I cannot throw very much light upon it. There are so many things that I do not feel I could speak certainly about. But in case of top grafting the Spy onto other varieties in order to induce early bearing of the Spy, I am quite sure there would be no advantage if we top graft on very young trees, no advantage particularly, but only on trees of considerable size, and I think, there is no doubt that the Spy will bear early. That is true in top working on different varieties of trees. There it is an advantage. Take the varieties that are a long time coming into bearing, and put them onto a bearing tree. But with regard to what stock to use I am sure I do not know, but I would be careful to use the hardy stock, like the Ben Davis and the Gano. We know that the Baldwin is not very hardy. I would look into that of course, but when we get into that we do not know much about it. We know that there are a few varieties in the hardy list, and a few in the tender list, but we do not know but that conditions will arise that will make any variety go on the tender list, so we are a great deal at sea in the matter after all. If I were expecting to put out an orchard and top graft it after it was put out, or rather had to take varieties that I did not want to bear, I would rather do the top grafting when the trees the small. Either do that or else wait until they had sufficient branches, and then graft into the branches. In other words I would not want to graft into the body of a tree two or three inches in diameter, and it is a good way in such cases as that, where you are obliged to take varieties you do not wish to keep, to do the grafting before you put them out, and yet I do not believe that that is a very safe method in the hands of a good many. The people in the Northwest have had a good deal to say on this subject with respect to grafting tender onto hardy, and they use the Duchess. I think the Duchess would not be srong enough to use. It is not weak, but it is not strong enough to make good stock for some of the stronger growing varieties. I believe the Gano or Ben Davis would be the kinds I would use. As Mr. Farnsworth said, the top has a great influence over the root. You may take any stock and top graft a crab into it, and you will have a crab in a very short time.

Mr. Pierce: Take a tree two inches in diameter, would that change the root?

Professor Green: I do not know.

Mr. Pierce: It will in a nursery.

Professor Green: I suppose it must be true to an extent at least. I doubt if you get as strong a tap root with the crab scion. There must, however, be more or less influence. There is another plan that is worked in the Northwest that it seems to me has some advantages. They take a long scion and a very short piece of root, which is simply a little piece for a nurse to keep the scion alive, and plant down deep, and get a tree on their own root. They claim advantage for this. Perhaps there is no advantage to us whatever, but in some cases I haven't any doubt it might. It has not been tried here at all. In fact, the whole subject needs to be investigated before we can speak very confidently. There has been an immense amount of discussion, and not very much experience.

Mr. Pierce: You can generally find out all about it from the tree agent. [Laughter.]

Professor Green: Yes, you can get the whole thing from them, and a little more.

A Member: I happen to know an orchard about forty years old, which was a Northern Spy, and when it was ten years old they changed it to Willow Twig. It has been very profitable, so much so that with an orchard of 800 trees they have set out Northern Spies, and grafted to Rome Beauties. It has been well cared for, and has had remarkable success. One portion of it of about ten acres with about 400 trees on it had something over 3,000 barrels in one year, and the orchard is very thrifty today. It had a good crop on this year.

A Member: Where is that?

A Member: That is in Hancock County, W. Va.

Mr. Peterson: At what height do you insert the graft?

The Secretary: Two feet from the ground.

Professor Green: In regard to the top working, I think caution should be exercised at the time they are transplated. I do not believe in the hands of an ordinary grower it will be successful. My idea is to take it as it comes from the nursery, and plant it until it grows thriftily, and then top work. From my own experience, and from what I have seen other people do, if it is done immediately on planting out or before, it will be a failure in almost every instance.

The President: We will next have the report of the Treasurer. As the Treasurer is on the jury, and cannot be here, we will have the Secretary read his report.

TREASURER'S REPORT.

BY R. J. TUSSING.

January, 1908.

In account with Ohio State Horticultural Society.

1907.		
Jan. 18.	Paid E. M. Woodard, office expenses	$33 95
18.	Paid E. M. Woodard, six months' salary as secretary	50 00
	Total	$83 95

In account with Ohio State Horticultural Society.

1907.		
Jan. 18.	Balance in treasury	$ 3 45
18.	Received of E. M. Woodard	38 00
18.	Received of W. W. Farnsworth	45 95
	Total receipts	$89 40
	Total paid out	83 95
	Balance in treasury	$ 5 45

R. J. TUSSING, *Treasurer.*

A Member: What is the appropriation for this Society?

The Secretary: Fifteen hundred dollars a year for the last two years.

The President: I will appoint Professor V. H. Davis and Mr. F. H. Ballou as an Auditing Committee to go over the books of the Treasurer.

The President: The next thing on the program is the report of the Executive Committee.

Mr. Montgomery: The Executive Committee is to meet the Secretary of the State Board of Agriculture at his office immediately on adjournment of this session. That is the new Executive Committee. This is all the report that the old Executive Committee has.

The President: We will next have the report of the Secretary.

SECRETARY'S REPORT.

The first of August, 1907, marked the completion of the first year of existence of the new plan of organized horticultural work, and a brief statement of some of the work under way may be of interest.

In order to put the office in communication with the largest possible number of fruit growers in the state, I first collected a mailing list of about 4,000 names of those in our state who are growing horticultural products more or less extensively.

I also responded to calls for assistance and attended a number of institutes in sections of the state where the horticultural interests are prominent, and also attended several meetings either regular or special, of county horticultural societies, among which I might mention, Clyde, New Carlisle, Dayton and others.

I believe we might profitably hold more of these one or two day horticultural meetings or institutes in the future, in order to bring the horticulturists of the state into closer touch with our society.

I also enjoyed the privilege of meeting with the horticultural club of the Ohio State University and addressing them on horticultural topics.

It surely is inspiring to see so many trained and enthusiastic young men preparing to take up our noble calling.

Ten thousand copies of our report were printed and distributed and it was also incorporated in the annual report of the state board of agriculture.

A great many seekers after information have been answered to the best of our ability, and we have tried, in co-operation with the experiment station and the division of nursery and orchard inspection, to spread the information necessary to successfully combat scale and other pests and to avoid damage by frauds.

I think none of our members have invested any great amount of wealth in the seedless apple, and in this connection, I wish to express my appreciation of the work being done by the agricultural and horticultural press, and especially the Ohio Farmer, Farm and Fireside and the Rural New Yorker, to protect the interests of the farmers.

FRUIT AND FORESTRY SPECIAL.

The Ohio State University, in connection with the B. & O. S. W. R. R., had arranged for a fruit and forestry special train, from which we were anticipating good results, but the high waters caused it to be postponed.

The benefits of advising the consuming public of the value of fruits as an essential part of their daily diet was discussed briefly at our last annual meeting, and immediately thereafter I took up the matter.

Believing that the work should be of a national, rather than a local nature, I communicated with men who are doing national work in horticulture, with the result that we now have a national bureau of publicity, which is supplying to the press items calculated to furnish information as to the value of our products, and encourage a more general use of them.

A few weeks since it was my good fortune to attend the splendid meeting of the Michigan Horticultural Society, at Battle Creek.

As the society was being shown through the works and offices for which that city is famous (health foods), I felt that their phenomenal growth and prosperity was due mainly to three causes: 1st, the production of a good article; 2nd, putting it up in neat and attractive packages, and 3rd, educating the public as to the value of their wares.

It occurs to me that these are the three essentials for horticultural success also, and while we have been carefully studying the first and giving a little thought to the second, we have almost ignored the third.

SPRAYING MATERIALS.

The wholesale buying of spraying materials which was authorized by the society at the last annual meeting proved very successful.

Nearly five thousand dollars' worth of material has been purchased, and the only complaint has been that a part of one shipment went astray, and this will soon be corrected.

This material went all over the state and the buyers saved a considerable amount in price, beside being assured of securing something which would accomplish the work for which it was applied.

FIELD MEETING.

The field meeting held last October at North Amherst, in co-operation with the experiment station, was a decided success, in spite of the unfavorable weather, and proved the value of these object lessons.

I believe the great majority of those who attended it went home firmly determined to do better spraying next year.

A HARD GRIND.

The criticism has sometimes been made that our meetings are devoted too exclusively to hard work and visitors sometimes wonder at the length of our sessions and the amount of information elicited and business transacted in two days.

I take it, however, that the most of us come here to secure information, rather than for a "junket,'" and the progress which our fruit growers have made, and are making in the practice of spraying and other lines of our work, is proof that our time has been well spent.

Our reports are eagerly sought for by every state in the Union, as well as by foreign countries.

FERTILIZER EXPERIMENTS.

You were informed at our last meeting that plans were being formulated for testing chemical fertilizers by the experiment station, in co-operation with fruit growers throughout the state.

Upon entering into the problem, it developed such complicity and magnitude that it was thought best to defer it a year.

I believe arrangements are now completed to commence operations this spring on a very thorough series of tests, in which the stations of Ohio and Pennsylvania, as well as the fruit growers of these states, will participate.

The fruit grower, even on rich level land, often finds it difficult to secure as much stable manure as he needs, and he also wonders if it might not be better for the color or flavor or keeping qualities of his fruit, or for the hardiness, productiveness or longevity of his trees, if he used more mineral fertilizers.

If this problem presents itself to those so favorably situated, what shall we say of the grower in the hilly and less fertile portions of the state?

"He who causes two blades of grass to grow where but one grew before," is acknowledged to be a benefactor to humankind and to the state, and we believe a similar work is before us in an effort to cover the hills of southern Ohio, many of which are now yielding very scant returns, with orchards of palatable, wholesome and profitable Grimes' Golden, Jonathan, Rome Beauty and Ben Davis.

Anything which develops and utilizes the wasting resources of our state, and makes them yield a profit which shall build up happy and prosperous homes on every hillside is deserving of the highest commendation and encouragement.

The success of a few orchardists in Lawrence and other southern counties has encouraged others to try. and they are eagerly seeking for information, which it is our duty to supply.

The West is irrigating its arid lands, Holland is dyking and reclaiming her swamps, and France and Switzerland have long since terraced and made tillable their hillsides; all to appease land hunger. And let us follow their example and help to clothe the hills of Ohio with forests and orchards, and add to the resources of the state and to its wealth of money and its greater wealth of happy homes.

With this in view, we must not only be able to inform them what varieties to plant and how to prune and spray, but a very knotty problem presents itself as to fertilization.

Barnyard manure cannot be secured in quantity, and cultivation and cover crops are impracticable on account of damage from washing in most cases, so that we must apparently turn to commercial fertilizers and mulching.

Some of our people have been investing in orange groves in California and Florida, or in peach orchards in Georgia or Texas, and overlooking the "acres of diamonds" (otherwise known as apple orchards) which are possible in our state.

In conclusion, I wish to state that our division has been given every courtesy and convenience possible by the state board and I believe the work is now outlined and begun, and if sufficient means are placed at our command in the future, so that the work may be continuous instead of during the winter months only as at present, a vast amount of good may be accomplished.

The people are demanding more and better fruits and vegetables and more refined and attractive home surroundings, and it is our purpose to assist them in gratifying these desires.

Respectfully submitted.

W. W. Farnsworth,

Chief of Horticultural Division and Secretary of Ohio State Horticultural Society.

Upon a motion by Mr. Montgomery, seconded by Professor Selby, it was ordered that the report of the Secretary be received and placed on file.

The President: The next on the program is the report of the Awarding Committee on the essays as to "Dietetic Value of Fruit."

Professor Lazenby: I am not a member of this committee, but the committee has given to me for reading, a brief report. Seven essays were handed in under various nom de plumes, and the judges did not know who the competing essayists were. The essays have been ranked by the committee as follows: Horticola, first; Flora, second; Esculent, third; Appleseed, fourth; Henry, fifth; John, sixth, and Ceres, seventh. Horticola is first. I put in that essay, but as all of the others were students of the University I want to withdraw from the competition. I had no knowledge whatever of how the marks would go, and I am sure that the committee did not know I had competed. I want also to say that I did not stand first unanimously, but I am very glad to withdraw; if there had been more of the older members in competition, I should not have withdrawn. So the first prize will go to Miss Anna M. Noyes, who wrote under the name of Flora. She is a senior in the Domestic Science course in the University. Second prize goes to Mr. J. H. Gourley. He also is a senior in the University. Third prize goes to Mr. G. L. Parks, who is a student also, and has made a specialty of horticulture, but is not in the Horticultural course.

(Upon motion ,duly seconded, it was ordered that the essays be published in the year book, and that the report be received, and placed on file.)

Mr. Waid: I just want a little credit for this winning essay, and would say that the student who took first used to be in my Sunday school class up in New Hampshire.

Mr. Shirer: And did she go out in the afternoon after Sunday school and hook apples?

The President: We will now hear the report of the Committee on Resolutions.

Thereupon the Committee on Resolutions, through its Chairman, submitted the following:

1. Resolved, That we ask the Legislature to make an appropriation to establish a substation in Northwestern Ohio, the object of which shall be largely to work in the interest of horticulture.

2. Resolved, That this organization, in the interest of the citizens of the State, in the interest of the farmers and dairymen in having pure cream and ice cream, call upon the Legislature of Ohio at this session, to enact a law making a standard the same as Congress has made for the District of Columbia and interstate commerce, which is 18 per cent. butter fat in sweet cream and 14 per cent. for ice cream.

3. Whereas, we believe there was a vast amount of good derived from the field meeting in Amherst, Ohio, in 1907, be it

Resolved, That we request the Executive Committee to arrange for a similar meeting in July, 1908, at some point where a thorough test of different makes of spraying machinery can be made for the benefit of those in attendance.

4. Be it Resolved, That the State Horticultural Society go on record as favoring a provision at the earliest possible time for a building suitable to the needs of Horticulture and Forestry at the Ohio State University.

5. Resolved, That we favor a suitable appropriation in favor of the Ohio Agricultural Experiment Station that will enable it to carry on co-operative experiments in Horticulture for the improvement of Horticulture in Ohio.

(Signed)

S. R. Gill,
W. G. Farnsworth,
F. H. Ballou.

Mr. Pierce: I move we accept all of them except the one on the dairy business. If not out of order, I should like to explain why I oppose it. If the dairy people of this state should put a resolution through their meeting asking the Legislature to pass a law that we should brand our apples or strawberries with our own names, we would think they were meddling. I think we are meddling with something not horticultural. It does not look in good faith for us to do it.

A Member: I second the motion.

Mr. Gill: I was the means of the introduction of that resolution, and for this purpose, that throughout the State generally there has been a sort of dope made and sold as ice cream. Now I think that the citizen generally wants what he pays for, and wants it pure, wants what he pays for, and wants what he expects to get. The National Government has established a standard for interstate commerce between the states, and also for the District of Columbia. In Indiana they have adopted a very much lower standard, and in this State they are about to adopt something of the kind, and I think it will be a disadvantage to all interested, the citizen as well as the farmer. I am asking this with a view of having each of the bodies who are interested pass such a resolution. We are interested in dairying along with the fruit, in getting the manure that comes from the dairy cow. Now a resolution from the different organizations at this time will have, I feel, a good deal of effect on the Legislature. I think they would be more apt to take up a thing of the kind, and bring it about for the good of the citizens at large, as well as for the dairy interests, and that was the reason for my introducing it.

(The motion above made, having been put by the President, was carried.)

Mr. Shirer: I move we adopt the resolution as to the standard for cream and ice cream.

Mr. Phelps: I happen to know something about the ice cream business of this city, and I know there is a great deal of ice cream made here with very little cream in it. My son has been in business here for two years, and I assist him a good deal, and we found out that the low price of ice cream came from the fact that there was very little cream used. There was something else used which makes it stand up and appear like cream. We know this to be a fact, and that very fact has driven many men out of business in this city, men who wanted to make pure cream and couldn't afford to sell the ice cream at the price it was sold at. There was a good deal of cream here sold at fifty or sixty cents a gallon, and no man can make ice cream as it should be for less than seventy-five cents, and make any profit at all. We know that, because we were in business, and were driven out of it, and that is the reason.

Mr. Shively: I think if the action of this Society in passing upon that resolution would cause the dairymen to pass a resolution compelling us to brand our fruit, that the passing of this resolution would be the best act that we could do. I think we fruit growers would be better satisfied if we had such a law, and therefore I believe we would put better fruit in our packages.

A vote being taken the second resolution was adopted.

The President: The next thing is the election of officers. I wish to say myself that I thank you very much for giving me this little boost, although it came accidentally. The Secretary, when he resigned, put me in. I was not expecting anything of that kind. I believe the hope of this country is in the men who are doing something for the country. I believe you should help some of the other men with this position, and I ask you to put in some one else at this time.

Mr. Shively: If nominations are in order, I would nominate our present President as a candidate for the office for another year.

Mr. Hutchinson: I move that the nominations be closed, and that the Secretary be instructed to cast the vote of this Society for Mr. Cox as President.

The Secretary: You have heard the motion, gentlemen, that the nominations be declared closed, and that the Secretary be asked to cast the vote of the Society for Mr. Cox, the present incumbent, as President of the Society for the coming year. If there are no remarks those in favor of this motion will say aye.

(Motion unanimously carried, and Mr. Cox declared elected President.)

The President: I have a few apples back here, but not enough to go round. You have too much to do this afternoon to tarry with a speech from me. The next thing is the election of a Vice-President, and we will now proceed to that.

(Mr. Hutchinson is nominated as Vice-President for the coming year.)

(It is moved and carried that the rules be suspended, and that the Secretary be instructed to cast the vote for Mr. Hutchinson as Vice-President for the ensuing year. The Secretary so cast the ballot, and Mr. Hutchinson is declared elected.)

The President. The next is the election of the Treasurer.

(R. J. Tussing is nominated, and upon motion made and carried, rules were suspended and the Secretary was instructed to cast the ballot for Mr. Tussing as Treasurer of the Society for the ensuing year. The Secretary so cast the ballot, and Mr. Tussing was declared Treasurer for the coming year.)

The President: The next is the election of two members of the Executive Committee. The two members whose terms expire at the present time are C. W. Montgomery and W. N. Scarff. They are to be elected for two years.

Professor Selby: I would like to offer the names of Mr. C. W. Montgomery and Mr. W. N. Scarff.

Mr. Riggs: I move that the rules be suspended, and that the Secretary be instructed to cast the unanimous ballot of the Society for the two members nominated by Professor Selby.

(The motion was put and carried, and the Secretary so cast the ballot for the gentlemen named as members of the Executive Committee.)

The President: We will now take up one or two of the questions.

A Member: May we have an answer to question No. 7, "Are any of the apples of recent introduction of any commercial value in Ohio?"

Professor Green: It takes a good while to find out whether an apple is worthy of general use or not, but the ones that I know most about are as follows: There is one variety that we have at the Station under the name of the Titus Apple; I am not positive that the name is right. We did not get it under that name, but think it is the variety called Titus. It resembles the Duchess very much, is a little later and a little larger and more highly colored. Inasmuch as the Duchess is one of the best of our early market varieties, and also for home use, and this comes just a little later, and is perhaps a little better, and will extend the season of the Duchess, it seems to me it is one that ought to be generally tried; certainly it is worthy of recommendation to that extent. The Moyer is another variety we think highly of, but we cannot speak with confidence at all in regard to it, because we have not known it for a long enough time, nor on enough trees, and we do not know about its behavior in other places. We call it an Improved Belleflower. Many of you will say that there cannot be much of an improvement on the Belleflower. It is not an improvement so far as cooking is concerned, but it is a little milder, a better eating apple. It suits me about as well as a Grimes' Golden, if not better, because the flesh is more tender. It is rather highly colored, and shows a red cheek more often than the Belleflower, and I think bears a little earlier.

A Member: What season is it?

Professor Green: About the season of a Belleflower. I believe it is more reliable, and a little better eating apple than the Belleflower. It was sent to us by a nurseryman from Indiana, and I cannot find out much about it. I do not think it has been distributed at all. The Garfield is an early apple that is of good quality, good for home use, not to be recommended for market that I know of. The Stayman—the Stayman Winesaps have a good many good points, but they are not colored as well as they should be. It is larger than the ordinary Winesap, and is a good grower. If it had a little more red, and was colored a little better, I would think more of it, but I am doubtful of it in that respect. Yet it is worthy of trial. The Mammoth Black Twig is another variety about which we cannot speak with much certainty. Some reports from it say it does not bear very well. The apple is all right, and is an excellent keeper. It is solid, an improvement on the old Winesap, which it resembles in some respects. It belongs to the family of Winesaps, and I believe the variety is well worthy of trial, particularly in the southern or central part of the State, and yet there is some doubt of it. The Walter Pease is of excellent quality for home use, but is not very much of an improvement over other varieties. In the Bismarck we can find nothing to recommend. The tree gets smaller and smaller every year with the blight. In regard to the Gano, I do not know what to say. It is a counterpart of the Black Ben Davis except for color. If anybody is determined to raise apples of that class, it would be better to take the Gano than the Ben Davis. The people in the West who have had plenty of opportunity to see the Gano are disagreed in regard to it. If one can sell that class of apples, it is all right.

A Member: Is it a better growing tree than the Ben Davis?

Professor Green: About the same. It bears young, and colors nicely, even in the northern part of the State. The Bortz is a good looking apple and bears well, although the quality is not very good. It is not in the same class as the Ben Davis; has more acid. I doubt if it is going to be a variety worthy of general commendation. So I haven't very much to offer that will be worthy of your trial except two or three, and if you are growing the early apples, I should try the Titus, and for an early winter apple, the Moyer.

A Member: What about the Hagloe?

Professor Green: I do not know.

A Member: How about the Banana?

Professor Green: I do not know anything about that.

A Member: How about the Opalescent?

Professor Green: I have seen it a number of times, but I do not know anything about its bearing qualities.

A Member: Isn't the Banana a good bearer?

Professor Green: I think it is.

A Member: About the quality of the Maiden Blush?

Professor Green: I think it is a little better than the Maiden Blush.

Mr. Montgomery: How about the Ingram?

A Member: How about Stuart's Golden?

Professor Green: I have not tried any of those.

A Member: It is claimed by many to be better than the Grimes' Golden.

The Secretary: The Banana has been inquired about, and I would like to state my experience with it. I have two large trees, top worked, which have been bearing a number of years, and while it is a good apple, I am not planting any more. It has a sort of Mayapple flavor that I do not like at all; perhaps many would like that. It has a pronounced flavor, and of course they suit some and disappoint others. It colors nicely, it is a very pretty apple, and it bears well. Taking it altogether, however, I am not planting any more. Perhaps I am missing it, but my opinion is that I have others that do better.

A Member: How long does it keep?

The Secretary: It is a mid-winter apple. I would rate it about like the Grimes' Golden in keeping qualities, but it is not as good in quality.

A Member: How about Greenville?

The Secretary: The Greenville is similar to the Maiden Blush, perhaps not so acid, and handsomer than the Maiden Blush, but the Greenviile lacks bearing qualities. I am thinking of top working it to Northern Spy, or some other variety, because of its lack of bearing qualities.

The President: We will now listen to the report of the Committee on the Students' Judging Contest.

Mr. Waid: The committee has to report the following names as taking the respective positions: First, T. W. Hood; second, J. H. Gourley; third, W. T. Yeager; fourth, C. D. DePue; and fifth, J. W .Gribbins.

(Signed)
C. E. Bassett,
C. W. Waid,
Committee.

(Upon motion, duly seconded and carried, it was ordered that the report of the Committee on Students' Judging Contest be received and printed.)

The President: Mr. C. E. Bassett of Fennville, Michigan, will now give us his address on "Some Neglected Horticultural Opportunities." [Applause.]

Mr. Bassett: I thank you very much, in the name of the Society I represent, and the State from which I come, because that is what I know you are applauding. I have enjoyed every minute that I have been with you and I bring you the greetings of a sister society, one not quite as old as yours, but one that is an energetic medium for the advancement of horticulture in our state, and one which is working along lines quite similar to yours. When I listened this morning to the report of your professor in entomology, it seemed to me that should I shut my eyes, and did not know who was talking, I should imagine it was a Michigan man making a report for Michigan, because he did not make a single statement that is not borne out by our experience in Michigan, and I was speedily struck by the similarity in our experiences. After all, Michigan and Ohio, while they are two different states, doubtless some of our horticultural conditions are so nearly identical that we could make a society with a part of Michigan and a part of Ohio that would agree better than your Society itself, because conditions in the peach sections of the two states are so similar that outside of a few varieties, we have practically the same. I trust these friendly visits we make back and forth may be continued. Michigan horticulturists have a grand idea of your Society, and our people up there received it as a first impression from the gentleman you sent to us. We have had the pleasure of being visited by such men as your President Cox, and both of the Farnsworths, and former President Miller, Professor Green, and other gentlemen from your Society, and when I name such men you will readily understand why we have a good opinion of you. We have sent you some men that are just as good, I believe, although possibly they do not make as good an appearance as some you have sent to us. I did not come down to balance the whole debt. I know I could make up for your Secretary and President and a few others, but it would take an effort on my part to balance the whole six. [Laughter.] But if I fail to make good you will please be charitable.

Among the little jingles and rhymes I learned as a boy, and which seemed to have an influence on me and on my future, there was none whose sentiment so firmly fixed itself in my mind as that little story of the man who roamed the whole world over in search of a four-leaf clover. You remember about his failing in his search after that thing that he thought would give him peace forever, until coming home, a weary and tired man, discouraged and disheartened, he threw himself on the ground. But he quickly arose, for there right at his own house door and growing all around in the fields were these bunches of the long sought four-leaf clover. And so with this little four-leaf clover as a text, from which I will do much wandering, I want to call your attention to some horticultural opportunities neglected not only in Michigan, but in Ohio as well.

The early settlers of these two states, coming from the East where conditions were such that most of the fruit of a temperate climate could be profitably produced, naturally brought with them the desire to plant and propagate the fruits which had made their home life in the East both pleasant and profitable. They brought with them the trees and plants and scions and the seeds which woud produce them, and hoped in their new homes to obtain some of the delightful conditions that existed in their first home. In those days conditions were favorable for the propagation and growth of these fruits, because natural conditions were more pleasant then. There were not the many insects and diseases that we have to contend with now, and the result was that they grew. In new sections where the people grow fruit, especially the apple, they do not have to contend so severely, because the conditions are more natural and the soil more virgin. Hence the necessity for excessive spraying, and for keeping up the fertility and so on, do not exist in the new sections that do trouble us in our old, well worn and well run lands. But with the increase of insects, and with the wiping out of many of our birds that kept down the surplus of insects, with the introduction of new varieties of fruit and new nursery stock, bringing with them and upon them many of the diseases and many of the insects which have caused us so much trouble in later years, more and more it is required that the life of a horticulturist shall be one of activity, education, industry and of economy in every way,

The result was that fruit growing to a large extent in Michigan and in Ohio became a side issue, and the little apple orchard which has marked every farm nearly in the community was simply allowed to go down in neglect. It is to these neglected apple orchards that I wish to call your attention, and also to impress upon you some thought of the opportunity that lies right here at our door. America is a wonderful land. We have been told that it is a land of opportunity, and you, if you stop to think of the blessings that surround us, of the opportunities which are ours, should realize also that this opportunity means an obligation for you and me. Go over to Wisconsin and attend their society, and see what they have to contend with. They can scarcely even grow the Ben Davis apple. They have to propagate varieties so hardy that you and I would hardly care for them. They have to appeal to the sand cherry and the wild goose plum, and its relatives, and the ones they have propagated from it, and when I went there and listened to the talks and heard the men and women speak, and saw those seedling apples, which had been produced by those men and women, I felt like taking off my hat and saying to myself, "Go back home, and redouble your efforts. You are simply a lazy fellow if you can't do well in Michigan, when these people under less favorable circumstances have worked out so great an horticultural salvation as they have for themselves." I say to you also that Ohio is a grand state. I haven't come here to compliment you, because I don't think Ohio is any better than Michigan, but Michigan is a grand state, and Ohio is also. That line between the two states is only an imaginary one, and because one of you lives in Lucas County, Ohio, and another in Monroe County, Michigan, I do not know why your opportunities are very different because an imaginary man-made line is there somewhere. We live in grand states, states that give us great opportunities in the way of climate, soil, markets, and so forth. There is a saying in Latin, which being translated into our tongue is "Rank imposes obligations." Opportunity imposes obligations upon us also, and if to you many talents have been given, in the words of scripture, from you much will be required. If with the many opportunities to be used and to be developed, you fail, just to that extent and in the proportion of your failure, and in the proportion of the number of opportunities that have been given you in the way of climate, soil, in the way of all these other things which are to your advantage, just so sure will be your condemnation in the end. There is hardly a mail that comes to my office, hardly a mail that comes to you that is not loaded with propositions of get-rich-quick schemes, opportunities in oil, copper and in every possible thing, and of late we have been flooded with opportunities for getting rich by going to Washington and Oregon, and producing those beautiful fruits we hear of. I want to call your attention to the fact, because we have had a little experience in our country. I don't decry Washington or Oregon. They have certain opportunities that are even greater than ours. They also have their disadvantages. They have, as we attempted to show last night, a dry, clear atmosphere, and the consequent excessive amount or degree of sunlight, and I attempted to enforce upon you the importance, according to my opinion, of the very fact of sunshine being an absolutely necessity for the perfect development of fine quality and highly colored fruit. The lack of humidity, of moisture in the air, possibly accounts to a large degree for that extra amount of sunshine. On the other hand, the lack of moisture in the air requires that expensive operation of irrigation which we are not obliged to carry out, and which is to their disadvantage possibly as an expensive operation, and to their advantage from the fact that they can handle the water as they wish. There is another disadvantage, that very many of those orchards are far from any shipping station, and the expense of transporting that fruit is a very heavy one. Many of our strong points, strong opportunities, are our weak points. To illustrate, I live within a short distance, four hours' ride, from the city of Chicago across Lake Michigan. The very fact that we can put all kind of fruits on the Chicago market from where we live, at small expense, you say would be an advantage. It is, but the trouble is that our abuse of that advantage makes it our disadvantage, because the fact that we can cheaply ship poor stuff is the reason that we do ship poor stuff. The reason that the California grower ships good fruit is not because he is more honest than you or I, not because he is actuated by any more honorable motives, but because of the fact that the distance from market prevents him from shipping anything but the very best. That is a drawback to him in the fact that he must organize for packing, for carefully putting his fruit on the market, and yet the distance, which at first sight seems to be a disadvantage, becomes his advantage, because he has put on the market a class of fruit which is driving your apples and mine off the market. Go down on any of the streets of Columbus and look at the fruit stands along there, the bananas, oranges, lemons, grapes, every class of fruit, berries and all, and look at your apples; the poorest stuff in every case are the Michigan apples right here. [Laughter.] I might say the Ohio apples. [Laughter.] Michigan apples would not look any better here on your stands than yours do. But that is true. Because you can put them on the market in that condition, you do. Did you ever think as a boy, as you walked down the road in the winter, wading in the snow through an unbroken road, as you stumbled along on one side, didn't it look as though on the other side the snow was not so deep, that there were not so many ruts and pitchholes? The other side always looks better, but as you jump over, as I have done many a time, you find that there is still a lot of snow in the way, and that it is not much better there than where you were before. It seems to be born in us to think that the other fellow has the best chance, that the other fellow has a better opportunity, and when you get over there and compare the conditions we find the other fellow has disadvantages that we never noticed. All we could see was the bright sun that shone; we couldn't see any of the clouds which he, over on his side of the road, actually did see. I said there were a lot of get-rich-quick schemes. In our section of the country we have some disadvantages that you have here, practically the same all the way through. We have to fight about the same difficulties and get about the same results. But these old apple orchards of Michigan and Ohio mean something to us. Can we do anything with them? Must they go entirely, or must they be left as they have been? I am honest in the belief, and that belief is not only a theory, but a belief borne out by practice which several of us have been trying to carry out, that those apple orchards have a future, and that while some of them are of small value possibly, and are not for permanent use, because they have passed the prime of their life, still while we plant young orchards of new varieties, let us take care of those old trees, and my appeal to you this afternoon is for the old apple orchards of Michigan and Ohio.

We are necessarily in our section a peach country, but we had a whole lot of apple orchards, old ones, some of them sixty-five years old, but the growing of apples was a secondary consideration; if there were any apples, all right, and if there were not, all right, too. The orchards were not cultivated, and apples were a side issue. And that is the trouble. Our horticultural industry is a side issue, and nine-tenths of the people who make failures do so because they have no time to spend in taking care of their orchards. But in our section of the country we had one or two men who had fairly good old orchards. One of them was a manufacturer of a spraying pump, Frank Morley. He had a farm near us, and we talked in our horticultural meetings about the future of those apple orchards. We did lots of talking, and that is about all. It didn't seem to do much good, but finally this man Morley took care of his orchard. He used his spray pump on this orchard, and practiced what he preached. The first thing we knew a fellow came in there and paid $2,800 for his little eighteen-acre crop. That looked good, and the people began to sit up and take notice, and some other chap over in another section said, "I have just as good an orchard as Frank Morley, and I will give it a test of that squirt gun business," and he started in and did a good business, and the spirit became contagious. Others took it up, and they all did a good business, and today I believe the little town we live in shipped more cold storage apples this year—not cider apples, but cold storage, which means perfect apples—than all the rest of the state put together. That is a big assertion, but it is borne out by the claim of the men who bought the apples, practically all the apples in the state, and I do not believe it can be gainsaid.

I told you last night about two young apple growers named Wadsworth. I want to tell you this afternoon about the success of another young man. There was an orchard owned by Mr. Hutchins, a member of our Executive Board, and his father was a pioneer in that country. It was sixty-five years of age, and occupied twenty-five acres. That orchard to my knowledge had not paid enough to amount to anything. The apples were practically turned over for cider, possibly a few apples were put in the cellar for the family use, but as an investment the orchard amounted to nothing. This pioneer died. His widow had trouble in having the farm taken care of, and this orchard never was depended on for anything. Finally a young man named Truax rented the place on a one-half basis. The farm is a large one, one hundred and twenty acres; we call it large in that country. He attempted to raise corn and so on, but was encouraged by his neighbors to see what could be done in this apple orchard. For the last three years he has been making more money out of the apple orchard than out of the rest of the farm altogether. The twenty-five acres would pay him more than nearly 100 acres outside of the buildings put into grain of all kinds and some stock.

This last year he went on, but had trouble in getting help, and I will show you how energetic he was. He bought a power sprayer, a gasoline outfit. He cooked the lime and sulphur himself; he drove his own team, and he sprayed these trees himself all alone; he didn't have a minute's help from anybody. Naturally working alone, he did not get as good results as some. But on the eighteen acres as a whole he had a very fine crop of apples. He sold that crop of apples on the trees for $3,500. He received one-half of that himself, and that $1,750 which Mrs. Hutchins received, was more money than had been received from that orchard for the sixty-five years before, so far as I know. That man made his $1,750, and the apples were good enough so that the local firm who bought them from him, Dutcher & Leland, cleared $4,400. Seventy-nine hundred dollars for one year's crop from an eighteen acre orchard that had been run down and didn't amount to anything! Of course I am not saying what that fellow got who put them in cold storage. I think perhaps he is in cold storage himself. The money market went to pieces, and the apple market today is not what we hoped it would be, yet the apple buyers considered those apples good enough that they bought them at the rate of $3.50 a barrel on the trees.

I had some experience in our own orchard. Not to say that we did anything as wonderful as that in our orchard. We had on our farm, as I say, a small orchard, an apple orchard, which wasn't considered very much. We considered that if we realized $100 out of it a year we were doing well, and we did actually get that much. But I thought the way to get money out of apples was to put them in cold storage yourself. That was before spraying had come into practice. I considered I was business man enough to sell them myself, and I shipped them to Chicago, and put them in cold storage. Some of them were wormy and scabby, and somehow or other when they came out of cold storage they hadn't improved a bit. There was just as much scab, and just as many worms, and I thought the cold storage hadn't done them a particle of good. But the trouble was the market didn't go up any, and I lacked a little of having enough to pay for the barrels when the commission man and I settled up. I decided that something must be done.

The apple tree wood was worth quite a good deal to sell to the tool men that make saws, and we decided we would either sell them for that or give the orchard a trial, and being a member of the Horticultural Society, it seemed to me it would be the next thing to treason to chop them down. Now that apple orchard has done well. It was one of those "four-storied" fellows that stood up high, and was hard to handle. You have them here; I have seen them coming down on the train, and we have a lot of them in Michigan. It was a big problem. People said, "Be careful, don't cut off any big limbs. If you do you will have heart rot, and the tree will go," but I knew the tree would go anyway if something wasn't done, and we proceeded to remove about three stories of that top. I am not saying that is orthodox. I know the professors would shake their heads, and they should if they don't, but I have seen it done, and we have done a pretty good piece of work of it. One important thing. In handling the tree you must get an idea of how you want that tree to look, and then go in and cut them down to where you want them. After we cut the trees pretty heavily, we used paint. The first we used was a lot of old paint, with the skins and the scrapings and all of that stuff, linseed oil and all kinds of paint, and mixed it up, and made it very thick, and put that on. We had a boy follow it up, and where a limb was cut off at an angle so that it shed water, we would paint that carefully. A landscape gardener gives this formula, to use one part of powdered charcoal to three parts of quicklime, and then mix it with linseed oil to make a thick paint.

Lead and oil are all right, but the trouble is they cost a good deal of money. I am not going to attempt to tell you how to handle your orchards; if you have your orchard and want to handle it in a sod mulch, I think these gentlemen here can tell you better about it than I. But we went into that old orchard and broke up the sod. The first year we got no particular results. We sprayed thoroughly, but we still had so much top. It was so high that we did not get any results. The second year we had a great crop. I am great on the shock idea. I think if you want to get a tree in bearing you want to shock it. I have been asked a good many times whether it had that effect on me. [Laughter.] But in Michigan the second year after they break up the old sod they have an immense crop. I should judge the first year it threw the growth, which formerly had been making wood, into making fruit buds, and the second year you get the results from those buds.

Mr. Pierce: You do root pruning?

Mr. Bassett: Yes, but we also prune the top. In these old orchards you will have much trouble when you come to spraying with the Vermorel nozzle. We think it is the best nozzle ever manufactured, but we use a pretty powerful machine at from 85 to 135 pounds pressure, and the trouble has been with a Vermorel nozzle that the more pressure you get, it don't mean the farther you can throw that spray. It simply breaks it finer, and the difficulty has been to get the spray to the top of the tree where the large part of the apples would naturally be formed. I showed you last night the manner of spraying, and I told you that one man stood on the ground and sprayed the lower part of the tree, and another man stood on the top of the sprayer or on the elevated tower and sprayed with a long extension rod, twelve feet long, and he uses a Calla or McGowen nozzle, which is perhaps not quite so economical as it doesn't make so fine a mist, but it throws it higher and farther. Two can be used. We use the finer one set at an angle, and it throws a stream which will reach to the top of any of our trees as they now are grown. The result is that we get to the top with the Calla nozzle where the Vermorel fails to reach. If it reaches the top, I would not advise rejecting the Vermorel, but with us we have an extra story, and we want to get up there in some way if we have to use a nozzle that does waste the material a trifle.

As I told you, we cultivate our orchards. Another point is to study your trees, and see if those trees need fertilizing. We use this same idea with the peach, as well as the apple. If the tree is already making all the wood growth you want it to make why stimulate it any farther? The nitrogenous manure, similar to the stable manure, stimulates the wood growth of a tree. If it is growing all you want it to grow, you do not need to stimulate it more. Some of the apple orchards stood on good land, and nearly all that was required was a plowing up of the sod and sowing down a cover crop to get all the growth that was needed, and we did not need to stimulate it. Of course if you use a sod mulch, you have a different system. We use a cover crop in the apple orchard of clover. Of course there are several nitrogenous plants. We would leave that in an apple orchard longer than in a peach orchard, because in the peach orchard we feel that we must have cultivation and cannot leave it in a cover crop or a nurse crop, which would take up all the season, but in the apple orchard we do vary our system, cultivating one year, sowing clover, allowing it to perfect itself, plowing it under, and the next year cultivating it again, combining the two ideas of green manuring and cultivation.

Now I simply want to bring out here this afternoon in this rambling way one thought, and that is this, that there is a future for the orchards of Ohio and Michigan that are now being neglected. There is a future. While I don't want to say that every orchard in Michigan and Ohio can be brought to a profitable condition, if the trees are healthy, if the trees are of fairly good varieties, if the fertility is sufficient, or you can bring up that fertility, if the conditions, in other words, are not so bad that it would be best to cut them down, then I say it will pay to take care of them. You need not be afraid of overdoing this business of raising good apples. There has never been enough good apples raised in any year that I have heard of, good apples I mean, and not ordinary apples, to be put on the market. In our part of the country we got good prices this year, of course, exceptionally so, but we have been right along making the apple business outshine the peach business, although we hate to say that about the peach business in Michigan. But the apple business has shown results that will warrant the attention of old men and young men, and there are many and many young men in our state today who are looking for locations, going out and looking for old orchards where men have sat down and have only harvested a few poor, scabby cider apples, and they have shown that in two years' time those orchards can be brought to a condition where they will show a fine profit. I could tell you man after man and give you many names and figures, but time does not allow, and you do not care to hear it, but I wish to assure you that I am making a statement backed up by facts. There are a number of orchards up in our section of the country paying $3,500 a year, and the largest one of the lot is twenty-five acres, and the smallest eight acres. We have some first class young orchards, too. The George Tucker orchard there is another one that has made a record. It has cleared a net profit of $10,000 in the past five years, and he has only eight acres, and they are nearly all Baldwins, some Wagners, Greenings and Red Astrachans. Eight acres, and his crop this year paid him $500.00 an acre, and he did not have to touch the apples. He has an ideal situation. I do not want to give that hope to everybody as what you may expect. He has an orchard which is right in its prime, an orchard about twenty-seven or twenty-eight years old, but he didn't have to do anything on that farm but to take care of the eight acres, because take the $4,000 and deduct his expenses for caring for the eight acres, which is a small amount, and it leaves him a nice profit if he didn't have other crops.

This young Truax that I spoke of only rented from year to year. The owner of the orchard died, and the heirs saw that there was so much in that apple orchard that they of course were not going to give him half of an orchard that probably sold for $10,000, although they only got $1,750. So he has been looking around, and incidentally a lot of men from Oregon and Washington had been shipping in apples, and that got him crazy on the idea, and he came and talked to me, and I told him just exactly what I tell any young man. I say, "Don't look for your four-leaf clover too far from where you know the conditions. Stay at home. You know the conditions here. You were brought up here, and you know the methods that are successful here. You know how to do this work. You go out there, and have to begin to learn again." He says, "I know, but I have $3,000, and I believe I should like to buy some of that land in the Hood River Valley." I said to him, "Write out and see what you can learn about it," and he did. I met him on the street, and he said, "Things are not as encouraging as they looked." I said, "What is the matter?" He said, "How much do you think my $3,000 would buy out there?" "I said, "I guess I know about how much." He said, "They told about buying land at $50 an acre, but nobody advises me to buy it, because it will be so many years before irrigation is secured, and I would have to wait for that, and it would cost an enormous sum."

The result of it was that he found that good land, such as he would want to have, would cost at least $1,000 an acre. He would have about three acres to start on. That speaks well for the country. I take off my hat to any country that can sell its land at $1,000 an acre. This young Truax is going to take another Michigan orchard, which I believe is better, has better varieties, much better than the one he had, and he is going to develop that. A young man that will thoroughly spray 25 acres of land, doing his own cooking of lime and sulphur without any help, certainly has good stuff in him, and will make a success of it on another farm. I say I do not know of any industry of any kind—and I am pretty well in touch with other industries besides fruit growing—I do not know of any profession or trained business where brains pay bigger dividends than they will in the old apple orchards of our states. I do not know of a place where a young man can spend his life with a greater degree of success, and by success I do not mean simply financial profit, although that is an important element—I do not know a place where he can put in his time, and when he comes to lie down to take that long sleep, feel that he has done any better, than he can in reviving those old landmarks of Michigan and Ohio that were something, and which can again be made something. [Much applause.]

Mr. Knellinger: What varieties of timber are generally found on those lands that you have there in that country?

Mr. Bassett: Most all hard maple, beech, oak and hickory, that class of land, that is where I am particularly located.

Mr. Shively: Mr. President, to show our great appreciation of the presence of Mr. Bassett, who is here with us from Michigan, and the valuable instructions that we have received from him while he has been here, I move you that we give him a standing vote of thanks.

(Motion unanimously carried, and vote of thanks unanimously made.)

The President: Perhaps Mr. Bassett will answer for us question No. 10, "How long may a peach orchard be profitably cultivated on the same site?"

Mr. Bassett: I did not tell you my nationality, but you will know I am a Yankee, because I am going to try to answer that question by asking you one. How many hungry harvest hands could you feed at one table, as long as you brought them food? I went down to dinner today, and there was a man just ahead of me, and he had eaten everything they had set before him, and he had spilled coffee on the table cloth, and there were dirty dishes all around. I would have fared pretty slim if I had sat down there and attempted to eat at the same place, but there was a kind waiter who took pity on me and cleaned things up a little and laid down a napkin where he had spilled his coffee, and brought on some viands, and I fared very well. That is my answer to this question in a general way. There are coffee stains, figuratively speaking, in old orchard land. It is a big problem you have asked me to answer, and I can answer it in a general way. I can give you some experiences that would be misleading, because as a matter of fact the best peach orchard we have on our farm is the one that stands where two others have stood. It is the third one that has stood there; but as in the case of the waiter at the dinner table, we cleaned up the table between the times of the first and the second, and the second and the third. The soil can bear the same relation to the plant as the table and chairs do to President Cox. The table sustains the food, or holds it, the chair sustains the President. The soil in the orchard sustains the tree as far as holding it in position is concerned, and it also sustains the same relation as the table, it holds that which stimulates the tree, and so if you are going to perpetuate your peach orchard on one piece of ground, you have to feed your peach orchard as you feed the person who sits at the table, and above all you have to remove these coffee stains and these dirty dishes. The coffee stains and the dirty dishes that you have to remove are such things as the aphis and the yellows. Those things you must look after. As a matter of fact, in practice it is a pretty difficult thing to grow a second orchard where the first one stood. We have succeeded, I have said, in growing this orchard where formerly two went out from disease. There is one thing I want to bring out, because I would like to have an expression of the experience of this Society. At our December meeting at Battle Creek we had as good an authority as Mr. J. H. Hale, of Connecticut, on the question of whether you can set in a peach where a peach had gone out with yellows, and expect it not to be infected. Our practice in Michigan, in young orchards where a tree goes out, is to immediately reset that with another tree, and I cannot honestly say that we have had any more yellows as a result of that practice. We have a plot like that which is now twelve years old, and which will soon go out with old age, you might say, which replaced trees that went out with the yellows, and also trees that went out with little peach. I know that is contrary to Mr. Hale's experience, but I would like to know whether you would dare to try it here. I think an Ohio man would dare anything, but would you think it, Mr. Miller or Mr. Farnsworth or any of you men, would you think it practicable to replace in a young orchard, a tree immediately the next season after you had taken out diseased trees? And before that is answered I want to say another thing.

You have asked the question, "How long can you keep a piece of land in peaches?" We have been trying another experiment, and it is along the line of feeding. It is not in connection with fertilizers, although we use ground bone and potash. We have tried the experiment of starting young trees where they had gone out by disease with this thought in view. As a matter of fact, you would not set a little baby up to the table and expect it to get in very good condition on a diet of such solid food as corned beef and cabbage and pork and beans. You feed it milk and easily digested food. These trees we have are babies, and you must treat them as babies, feed them as babies, and you cannot expect them to digest corned beef and cabbage, speaking in a figurative sense. That soil had practically fed a big harvest hand, because that tree that came out of there had perfected crop after crop of fine peaches, and naturally enough it had drained from this soil until it was an empty table that the little baby had to sit down to in that case, and we went to the forest where there was a quantity of humus in the soil, where the soil was virgin soil, and in the fall when we pulled out that tree that died from disease, we scooped out a good, big hole. We brought up from the lowland a quantity of muck, and put it in that hole in the fall, so that it would freeze and sweeten it, as it is naturally somewhat acid. We put that in the hole, then we added some manure, and we added a little lime to sweeten the muck; and after freezing and thawing all winter more or less, when it came time to scoop that out we incorporated that kind of soil with the soil that the tree would have to live in afterwards, and we never had trees start as well before. Of course there was only a small amount of plant food there. Our object is to get that tree under motion from the very start. A tree that won't get a good start the first year never amounts to very much in the future. You must get a boom on it in the start. I would like to have you answer the question whether you, as a rule, practice resetting the peach where disease has taken it out, setting in another tree.

Mr. Shively: I speak from experience in Southern Ohio, and I believe Mr. Selby will bear me out in the statement I shall make. A peach orchard of sixteen acres which was pulled out at the age of twenty years was one of the finest orchards while it was in a healthful condition in all that country. It became affected with the yellows, and was taken out, and it was immediately reset again with young trees, and it has been now seven years since that orchard was planted, and I think there is not a tree in that orchard but that is badly infected with the yellows, not having borne a crop all that time.

A Member: Couldn't we have the same question answered in regard to apple trees? In our community we hear that it will not pay to reset where one has been taken out.

Mr. Miller: I feel just like corroborating what Mr. Bassett has said in regard to the feed. If you will feed the baby, you can raise another tree where an old tree has been taken out. I have a block of trees twenty-five years old—the trees are not twenty-five years old, but the plot has been a peach orchard for twenty-five years, and I feel no hesitancy in saying that I could continue it twenty-five years more if I desired, but it is about time the table was cleaned up, and a new cloth put on. But there are some growers on Catawba Island where the farms are small, and one has but little land, who have for twenty-five years kept their orchards in good condition. But there are other men who cannot do it. They have not learned the proper method of feeding the baby, and where the strength of the soil is exhausted it cannot be done. In regard to planting where the yellows have been, I have had but little experience, having had but three or four trees with yellows on my place, but there have been a few in my neighborhood. Where the few I did have were taken out, I replanted them at once, and I haven't seen another case, and in the adjoining orchard the same practice was adopted, and the trees did not have the yellows. In regard to replanting an apple orchard, I think the same rule would hold good. If plenty of plant food is furnished, you will have no trouble in getting a tree to grow where one has grown before. In our own practice we do some pretty severe trimming about this time of year, and in burning our brush we use the burner or crematory, as one of our men calls it. We accumulate a great body of hot coals, and they are taken along on our mud-boat, and we have a shovel attached, and when we come to a place where a tree has been taken out, we shovel in some of the coals. We take the trees out in the fall before the foliage is gone, leaving the hole in that condition during the winter, and we find that the ashes with the assistance of the hot coals thrown into that place will start a young tree very nicely.

Professor Selby: I think it is risky in Southern Ohio districts. I do not think there is any risk at all in the Northern Ohio district. You can replace the tree in the same place. Just why it is so I could not say, but it probably is true because of the neglected roadside trees through Southern Ohio. There is not so much risk from the trees that stood there before, but from those around it.

Mr. Riggs: After feeding these young trees with muck and nitrogenous substances, would it not be well to sow a cover crop that will ripen as soon as possible? And I would like to ask whether nitrate of soda with ground bone or steamed bone would not do as well by the soil?

Mr. Bassett: I am a little afraid of it. That is more like dynamite. It hurries things up too fast.

The President: I am afraid we will have to stop the discussion here, and go on with our program. The next thing is a paper by Professor Selby on "Factors in Plant Production."

FACTORS IN PLANT PRODUCTION.

BY A. D. SELBY, OHIO AGRICULTURAL EXPERIMENT STATION.

In a discussion of the "Factors of Plant Production," the term "production" is to be taken in a broad sense to mean the objective product of the particular plant under culture. With horticulturists this product is often the fruit borne by the plant, though not exclusively so, since our vegetables show a very wide range of marketable parts and our forage crops, none the less necessary, show a still wider range in the portion of the actual plant which yields us returns.

The writer recalls how much interest was shown in the discussion of "The Water Factor in Plant Growth," read at the Delaware meeting of the society in 1903. The stimulus to prepare the present discussion has been supplied by the suggestions made by members at that time and since. If it will help some grower of plants to safer and surer principles by which to guide his practice, it will serve the intended purpose.

THE FACTORS OUTLINED.

The factors of plant production appear to be of two broad classes:

I. The factors inherent in the living plant.

II. The factors external to the plant and which we may call its environment.

I. The factors inherent in the plant itself are a most potent and extensive group of vital forces whose influences are, I fear, but vaguely and imperfectly understood by most horticulturists. Their value to supply the basis of principles to guide the practice has been persistently overlooked and the acceptance of true knowledge has been hinderd or impeded by many notions often founded upon ignorance or upon an equally fallacious and mysterious faith in results due the growers.

To hear our horticultural discussions one might conclude that all these problems could be left to the one who propagates varieties, since varietal discussions are so dominant. Yet a little reflection will show how wide and complex a group of factors with which we really deal. Turning to these we may note:

1. The living plant is a machine to turn water, atmospheric carbon and some essential soil and ash constituents into plant tissues or fruits.

2. The labor of the plant is divided among the several sorts of parts or tissues, viz: the water absorption is done by the root system, the water and food conduction by the hardened ducts, the weight of support falls on the woody trunk or branches or their equivalent tissues in herbs, the labor of storage is variously placed, and the real, delicate, laboratory work of the plant is done in the leaves.

Please to bear in mind the all important water absorption of the roots and the yet more vital elaboration of all the available materials by the work of the leaves acting under the stimuus of the sunlight upon them; the roots are placed in the soil, the sole *source of moisture*, and the leaves are expanded in the air, which in the sunlight finds its *sole source of solar energy*. The living cambium layer between these roots and leaves reflects the labor of both.

3. The leaves of the plant are the plant's laboratory and in them especially the newly formed substances are produced.

4. The storage of excess food in the plant takes place in the fruit and in the branches.

5. The consumption of stored food by the plant at given times is a corollary of its storage. We must expect that to take place and count when it does so.

6. We may then inquire what is involved on the plant's part in the production of a fruit crop, as of a crop of apples.

II. On the other side of the problem, viz: that of the plant's environment, we must consider something about the following factors:

7. Sunlight in relation to plant growth.

8. Temperature and the diverse relations of different classes of plants to it.

9. The water supply available.

10. The soil and its contained plant food.

11. The cultivator's part in these external factors.

There is less need to discuss this external or environmental factor side of our problem at this present moment. The chief reason for this is found in the mutual adaptation of the cultivatedt plants to the existing conditions as regards sunlight and temperature particularly.

7-8. We may reassert with confidence the all essential part the solar force of the sun plays in the interesting laboratory of the leaf. We can even measure, in a way, the deficiencies of certain seasons like those of 1895 and 1907, from the point of lack of stimulus by low temperatures and reduced sunlight. I may remark here that I am personally convinced that we shall find many disappointments in our fruit crops next year that will prove clearly traceable to the deficient conditions as to sunshine, etc., for the season of 1907.

Under temperatures that are most favorable to our crops we may note the different needs of different plants in this regard. The grasses and certain cereals grow well and flourish exceedingly well under cooler temperatures than will bring heavy fruitfulness to these same cereals or will make good crops for midsummer. This difference in temperature needs explains the early season development of some crops and the late season or midsummer development of others. Maize, potatoes, cucurbits, tobacco and other crops serve to illustrate the crops that need high temperatures.

Another matter to note here is that in times of late summer drought the crop development is often most unexpected. I suggest that here we have the operation of compensating forces, the high temperatures and bright sunlight making up, if that were possible, for the apparent water deficiency.

9. The available water supply, the water factor, need only be mentioned now. Full discussion is given in the paper mentioned at the outset. The matter of the distribution of available soil moisture is, within bounds, under control of the culturist. No one dare deny the importance of this self-same water factor or its control.

10. The plant food contained in the soil is a matter of high importance, but can hardly receive proper treatment at my hands today. All the essential ash constituents of plants are derived from the soil, in soluble forms, and are taken up in the ascending water-stream in the plant. Without the necessary amounts, however small they may be, of these mineral elements supplied only in this manner, the plant forces fail. Without the small amount of iron also contained therein, cell division would not take place and the plant's chlorophyll would be as powerless. It will perhaps serve our purposes to insist upon this matter of dissolved materials several times mentioned. It is only through the absorbed water required to maintain the plant's ascending water stream that the soil plant food gains entrance to the plant.

11. The cultivator's part in certain external factors like water supply is certainly large and also as to plant food, but normally is small in the control of atmospheric conditions as to temperature and sunshine on outdoor crops.

12. Summing up all it may be noted that the plant is a product of its inherent or ancestral characters and of its environment in sunshine, temperature, moisture and plant food modified by the cultivator's treatment to conserve all favorable external factors.

I. We can now take up singly the inherent characters of the plant itself:

1 The living plant is, in a sense, a machine, more accurately a living force, by which, under the influence of proper temperature and sunlight, the moisture taken up by the root system from the soil is combined with carbon dioxid found in the air and thus results the creation of the compounds we call carbohydrates, or having hydrogen and oxygen in the proportions found in water. To call the carbohydrates by more familiar names, they are the starches, sugars, cellulose, woody fibre, etc., which go to make the great mass of all our grains, fruits and vegetables, as well as plant tissues.

While these compounds are being created, costly nitrogenous materials are taken up from the soil and are re-elaborated in the plant into the form of vegetable proteids so characteristic of our cereal grains as well as other seed plants. The living plant as a machine or vital force exercises all the activities inherent in the plant nature, yet, as before stated, this work of the machine, as we call it, is only possible in the presence of suitable temperatures and the all essential sunlight or solar force. The energy of the sun may be conceived, therefore, as being abstracted little by little by the leaf green or chlorophyll of the plant's laboratory, separated forever from the sun itself, but reincorporated with these new compounds formed in the plant; we may follow the thought further and conceive these portions of solar energy as being liberated and utilized when these compounds in mind are eaten and digested by man or animals or when decomposed by combustion or decay.

Another matter of very great importance is the part plants play in air purification: the plants utilize the carbon dioxid given off by respiration or by combustion. So that at the same time that the plant performs is service in plant production it adds the other beneficient service of purifying the air for the respiration of man and animals.

What factors will then influence or determine the efficiency of the plant machine? A general statement seems the only one possible.

We may believe safely that whatever agencies or factors the plant possesses by reason of its ancestry or parentage, or by reason of its adaptation to its environment or by reason of its special or local place surroundings will contribute to the products it is able to create and therefore to its productiveness. We are rightly accustomed to state that whatever excellencies the plant may have as a result of its breeding or selection will contribute to its value.

Not only this, but whatever effectiveness this living machine derives from its proper care through culture or fertilizers will show in the final result. Nothing is lost in efforts rightly directed toward increasing the efficiency of this delicately balanced machine. Nothing may be left to chance when dealing with these vital forces thus measurably under control.

2. The labor of the plant, that is, of the machine, is divided among the various portions or parts of the plant which we as plant students call plant tissues. Allusion has already been made to this general division. To illustrate more clearly, the water absorption is practically all done by the roots; therefore, soil plant food is absorbed in solution in the water derived from the soil. While limited amounts of moisture will be absorbed by nearly all living parts when water is sprinkled upon the surface of the part, the actual supply in this manner supplied to growing plants may be regarded as negligible.

In respect to water absorption, it is the fine endings of the roots, including especially the roothairs, and not the surfaces of the larger root branches, which perform the actual absorption. In the matter of the conducting tissues between the roots and leafy crown of the plant, we may mention them briefly. If a branch with leaves is cut off it soon wilts. Do we think death of this branch is so immediate? Certainly not. The sudden wilting is explained by the severing of connection between that branch and the remote water supply of the root system. We may also conceive of the living layer of a fruit tree as consisting of a continuous connection between the root system and the leaves. Over every root-branch, every twig or larger branch and over every part of the trunk is spread this layer of living cells, capable of multiplying by dividing and therefore of growing; we call it the cambium or living layer. But along with this conception of the living layer just presented we must get another thought, that of the comparative inactivity of the outer layer of bark, externally dead, and of the inner wood of the trunk which has also ceased to act. The inner or heart wood's actual presence is, in a way, a menace, since it may harbor parasites in its decaying parts, but there is no way of throwing off this dead wood within and only a limited shedding of the dead bark without.

The storage of food in twigs near the buds of the season is a well proved fact; but the condition of this stored food in fall and spring offers great contrasts as to its solubility. To this we must come again later.

3. The leaves of the plant are the very center of the plant's activity. Each active leaf is a sort of laboratory having in the chlorophyll or leaf green of the lamina or blade the agent through which the work is done. Leaf green—chlorophyll! What magic is wrought by it! What physical, intellectual and emotional stimuli are wrapped about the green of the leaves. The changing seasons of our latitude bring back to us the ever new spring each year. We may sympathize with the desert region where spring is not and we rightly scorn the monotonous low level of human life in the tropics, where it may be called continuuous spring!

Anew each year the possibilities of the activity foreshadowed in the new leaves each time put forth bring us back to this amazing blanket of green that is spread alike over the bare earth and the bare trees and we ask what it has in store for us. It has life in store for us; it has possibilities of food, possibilities of delicacies, of luxuries and of necessities in store for us. What more may be said of anything else with which we come in contact?

But to anticipate a moment: whence comes this laboratory of green? Does it spring out of the new growth, the new spring's food for plants and trees?

To answer in brief, the spring's covering of green is derived exclusively from food stored up by these plants the previous season—the growth of the early summer by which branches are elongated, buds are opened into flowers and initial fruits are formed, and as a result of which so much appears to take place, is exclusively made possible by using up stored plant food of the year before. So for purposes of explanation, since plant processes are in fact continuous from year to year and from decade to decade, we must take an assumed point of beginning whence we shall pursue our studies. This point for the present will be the unfolded leaves and their many times unfolded mysteries: it may be without effect before eyes that see not of the mysteries behind the mask of chlorophyll.

Given then the newly unfolded green leaf, how does it do its work? It works only under favorable conditions of temperature, as you know the optimum or best temperature for maize, muskmelons, cucumbers, tomatoes, and sweet potatoes is much higher than that for blue grass, timothy, oats and certain others. The plants we are *wont* to cultivate are those adapted to the *temperatures* which prevail *with us*. Further, the leaves perform their special labors only under the stimulus of sunlight. The mere fact that new leaves are being unfolded in plants does not signify that these leaves are actually working, except to exhale moisture somewhat in proportion to the humidity of the surrounding air and to respire as is their wont. Unless there is adequate heat and sunlight the work of these new leaves will be destructive of stored food alone. On the other hand, after the leaves are fully developed and are prepared to function as such, not a very long period of shading and inactivity is required until leaves so placed begin to use up their own substance, to turn yellow and finally die or drop off. What showers of otherwise healthy leaves yellow and fall from the shaded portions of each tree in midsummer! Have you not noticed them and reflected on their significance?

The settled work of the leaves, in addition to the evaporation or transpiration of water which must be brought up all the way from the roots to supply the loss, is to receive the air into its chambers through the leaf-pores (stomates); this air contains minute portions of carbon dioxid (CO_2), which, under the sunshine, will be brought into contact with the water (H_2O) we have just mentioned. The first product of this photosynthesis is formaldehyde and the solar force therein brings about the combination of these substances finally into any and all the following:

$C_6H_{10}O_5$—starch, or cellulose.
$C_6H_{12}O_6$—glucose or dextrose.
$C_{12}H_{22}O_{11}$—sugar, etc., (cane sugar).

At the same time, the indispensable oxygen that has before become tightly locked up with the carbon atoms, is liberated for its own great work. But what is the lesson for us as culturists? Simply this, no more, no less: *Every pound or measure of fruit on the tree or the vine, every pound or measure of vegetables of any kind that we may produce and every pound and measure of grain that may be grown must be elaborated in this exact, though slow and invisible manner in the green leaves of plants from the carbon dioxid gas in the air and the water from the soil, including its dissolved mineral or gaseous plant food.*

This may not alone determine fruitfulness, but without this slow, though enormous work of the plant's green leaves, there would be no successful plant production! This is the golden secret of the plant! This is the Aladdin's lamp that, touched only with the golden sunlight, does the work of making our crops for us! I conceive of no adequate manner in which I can emphasize sufficiently this all essential labor of the leaves of our wild and cultivated plants. Possibly it is just as well for me not to try further and leave it with the statement of fact.

LEAF ACTION VARIABLE.

Looked at in this manner, then, the short crops of a season like 1907 are entirely explainable, so far as the plant's work is concerned. The work cannot be done without the power to propel it. Whatever, then, impairs the plant seriously will find expression in reduced possibilities. This growing of plant products is not a grab-bag process wherein we grope blindly without light, but a process governed by regular laws, working under determined methods open as the light of sun to our inspection. Though we may be powerless to prevent the catastrophes of frost and flood which may destroy so much, yet their actions are openly in the light of day. When, moreover, leaves are attacked by parasites which impair their action as with parasitic fungi or which destroy the leaves as insects do, the leaf machine is put out of action and its labors cease.

We shall return to measures of leaf activity later.

4. The storage of excess food prepared by the leaves takes place first in the leaves and is then translocated or transported to points of need, as, for example, to the fruits of a tree, the seeds of grains, the roots or underground tubers of plants or to other points. In the case of our woody orchard trees, the fruit crop was long ago provided for by localized food storage and by the formation of buds and miniature branches which are to bear their flowers and fruits. No crop of leaves has done its intended work unless this accomplishment is attained. You realize clearly enough that this is so in the seed wheat, the seed corn, in the apple, peach or plum you pluck from the tree, or in the potato, turnip or carrot you turn from the ground, but do you sufficiently realize its truth as applied to fruit trees? If that were always true we would not prepare for apple crops by cropping off the leaves with live stock nor starve the trees so that crops are impossible *except after years of slowly regained vigor.*

Halsted has shown well what most of you can easily illustrate by longitudinal and cross sections of apple twigs. Below each last year's leaf-scar and, therefore, below each bud, there is a thickened or ridged portion extending downward on the branch. This serves, so to speak, as an adjacent reservoir of reserve food materials easily accessible to this bud. Indeed, the whole under surface portions of the twig and branch participate in this storage, though less obviously as to apparent thickening; the same is true of the root branches. When does food storage occur? This is a question of vital importance to the culturist. It certainly cannot take place to any great extent when the supplies of such materials are being consumed in growth of new parts. *Likewise, in the period of fruit crop development, the flow of plastic food will first be toward the fruit and new growth, and so long as this demand is large or until the fruit is practically matured there can be little storage of extra reserves.*

Compare the relative opportunity for reserve food storage in trees which produce an early maturing crop and those which ripen late. With cherry trees the preparation for next year is almost ideal, while it may be far from so in late peaches and winter sorts of apples. *Three calls are made* at these times upon the tree.

1. *Food to mature the fruit crop* and maintain growth.
2. *Food to form buds and blossoms.*
3. *Food to be stored for the next year's beginning growth by which blossoms and fruit are to become possible.*

The call for fruit ripening may be so large relatively to the supply that no blossom buds are formed! *How familiar is this phenomenon of alternate cropping, which we sometimes attribute to varietal characteristics!* What else can be expected when we have a very late maturing sort which fruits heavily, unless conditions for plant food and moisture supply, with internal elaboration by the tree, be almost ideal? Can we look upon alternate cropping of our Baldwin and Rome Beauty orchards as anything else than a most glaring evidence of the orchardist's shortcomings?

It is the orchardist's duty to reduce the load or to increase the food and moisture supply. Mr. Vergon and Mr. Miller have both often insisted on these points in practice. President Cox can offer suggestions on the necessity of destroying parasitic fungi in order to secure annual fruit crops.

Orchard cultivation as a means to the ends just named, and orchard mulching to the same end, are practices based upon sound principles. The vital need for cultivation to insure possible annual crops of late peaches has been well tested in our lake districts. This storage of reserve food materials will take place only when the consumption of such materials is less than the supply. Naturally, the maximum storage will come in later summer in our climate, and at whatever time it may come, the actual amount of it will be influenced by the supply of moisture at that time, because this will, if deficient, reduce the plant's ability to elaborate carbohydrates. The consumption of these reserve materials by the plant is a corollary of their storage. While in the plant it takes place in the early season and storage much later on, for what seem good reasons, I have chosen to discuss the matter after that of storage.

5. It is a popular fallacy that the rising sap starts the growth of trees. In reality, the essential problem is of the reverse order. *It is the buds of the tree which put forth in spring that by their development use up food and water and thus, as by the force of a powerful pump, start the ascending water current which the leaves maintain by the self-same action throughout the active season.* While we have a phenomenon called root pressure, due to absorption perhaps, this action is not the inciting cause so far as we know, of the beginning growth of spring. Indeed, the old experiment of conducting a branch of a tree, as a bearing peach tree, inside a greenhouse while the trunk and root remain outside and the root firmly in the cold earth, shows that such initial growth is incited by the higher temperatures. After a time blossoms and new leaves will be formed upon the branch within the hothouse, while the outside portions show no apparent change. Each tree bud, as each bud of a potato tuber or of a lily bulb, secrets certain compounds which may act upon the surrounding food reserves of starch, etc., converting them into soluble sugar, which in turn serves as food for the parts. The living leaf has this same power of transforming starch or converting it into soluble starch, glucose, whence it again becomes insoluble upon its restorage, if unused.

It is not necessary for me to state just how much of the development of fruit trees in the early season is made by reason of the reserves of the previous year, but it must be very large in amount. How else can we explain the fact that young apple trees injured near the base by freezing, grew and formed branches which survived until August? While some of this development must have been due to newly elaborated food, the facts of collapse show that the actual new contributions must have been very small. This vernal and early summer clothing of trees and earth with blossom and verdure is but the expression of last year's preparation for the season it is not to see—of last year's ever recurring debt to the next growth period. Whether this storage takes place in root-stocks or roots of herbs, or in the branches and roots of trees, or in seeds or tubers, its final purpose is to be re-dissolved for the new plants to come or new growth of old plants.

Whenever the plant may not have formed certain adequate reserves, as in the twigs of the Baldwin apple (including its blossom buds), there will be no effective crop of apple bloom. What has not been before laid up cannot later be called upon and as before intimated the tree can do a large amount of work, if this work is distributed in time, but too large an amount cannot be accomplished at one time. What then is involved in the plant's production of a fruit crop, as of a crop of apples?

6. Inquiry has been made of orchardists as to the relative amount of crop a tree of given age will produce. Dr .Chamberlain has reported that an average

30-year-old Baldwin apple tree will mature, in a full crop, about 30 bushels of apples.

Mr. Ballou has reported his observations that young trees of bearing age will bear about one bushel of apples to each year of age from transplanting. That is, a tree of five years, when fruitful, may not be expected to produce more than five bushels of fruit; one of seven years of age, seven bushels of apples. Upon this basis we may compute the work of the tree in producing a full crop of fruit. Thirty bushels of apples weigh 1,500 pounds for the large Baldwin tree.

The Baldwin apple, according to Browne,* contains about 80.36 per cent. water and 19.64 per cent. solid matter, together with other compounds as shown in the following table:

COMPOSITION OF BALDWIN APPLE AT VARIOUS STAGES OF MATURITY. (*Browne*).

Date	Condition	Water	Solids	Invert Sugar	Cane Sugar	Starch	Acidity as Malic Acid	Ash
1899—		%	%	%	%	%	%	%
August 7	Very green ...	81.53	18.47	6.40	1.63	4.14	1.14	.27
September13..	Green	79.81	20.19	6.46	4.05	3.67	....	....
November 15 .	Ripe	80.36	19.64	7.70	6.81	.17	.65	.27
December 15..	Overripe	80.30	19.70	8.81	5.26	none	.48	.28

Fifteen hundred pounds of apples, with 80.36 per cent. water, represent 1,205.16 pounds water and 295 pounds of solid matter, chiefly sugar. This 30-year-old Baldwin tree is computed to occupy a circle of 35 feet in diameter, having an area of 941.9 square feet .

I have no correct means of arriving at the relation the water in the fruit crop bears to the total water consumption of the whole tree, yet it can scarcely be a very large percentage, possibly 2 to 3 per cent. of the whole. Now the fruit crop brings down from the tree about 1 1-4 pounds of water for every square foot of the ground occupied. The spring and summer rainfall of 24 inches would represent about 1,884 cubic feet, and a weight of 117,560 pounds for the tree area, or about 125 pounds of water per square foot of area occupied. Probably the actual water consumption of the tree would approach 80 to 90 pounds per square foot, or a depth of 16 inches of water used by transpiration over the area covered by its branches. The size of the figures does not prove their correctness, but does give an idea of the enormous labor performed by trees in a season, even leaving out the enormous energy represented by the chemical compounds formed under the sun's influence.

In looking up experiments in the line of transpiration, I find that Haberlandt, a German botanist, has computed from his experiments that a field of sunflower or hemp will transpire or give off into the air for each unit of surface during the season of 140 days enough water to cover it to a depth of 227.8mm (15.2 inches) nearly; while a field of maize would give off in the same manner enough to cover the earth to a depth of 123.7mm or 8.25 inches.

Browne, C. A., Bull, Pa. Dept. Agric. 58 :15.

I would put the orchard need as rather above than below the hemp or sunflower need for water, so that my last estimate of 80 to 90 pounds per square foot is too low rather than too high. This does not include the water consumed in tissue building. We have in this water problem the ever recurring one of having the orchard surface absorb enough of the rainfall.

HOW CAN THE CULTIVATOR MODIFY OR IMPROVE PLANT PRODUCTION?

II. The cultivator of plants has a fine opportunity to show his superior judgment. This opportunity for wise and profitable discrimination is greatest in annual crops, as in a case like *maize*, and we have had illustrations of the successful application of right principles in breeding corn.

The orchardist who deals with trees that are years in coming to the time of large fruitfulness is heavily handicapped and especially if he is led to the planting of new varieties whose relative productive value, expressed both in terms of yield and commercial value, has yet to be determined. A fruitful variety is above all a prime necessity. Conservatism in choosing varieties will usually be found most wise.

But once established as to his trees, the horticulturist may be greatly assisted by basing his plans upon a wise appreciation of the underlying principles of plant growth which I have endeavored to set forth briefly in this paper. He will be aided by appreciating the true relations of the parts and processes of the growing trees and especially by a full knowledge of the true conditions of a large or overlarge crop of fruit. He may well be informed as to the great demand upon the trees at the time preparation is made for next year's fruit crop. Above all, he may take to heart the failure of the old haphazard orchards that are assumed to be able to take care of themselves. These have passed, because the principles of production were so violated that death or unfruitfulness could be the only result. I have at other times often laid special stress upon the necessity for healthy foliage if we are to secure right orchard returns. The principles elaborated in this paper will make clear how it is the plant suffers from *foliage parasitism*, whether it be from parasitic fungus attack, that gradually reduces the leaf activity and finally puts such leaves out of function, or whether it be due to insect attack, that leads to practical defoliation by a more direct method, or whether that loss of leaves be left to browsing animals as may sometimes be seen.

We shall be wise when we accept fully the true principles of plant physiology, coupled with all the aid given by her sister science, plant pathology, and apply these principles in the best form of enlightened practice. The road to success is by the paths of true knowledge and by that way alone.

The President: You have heard this excellent address, and it is now open for discussion for a short time.

Mr. Riggs: I would like to ask what is the real object in storing up plant food in a plant if the temperature of the spring is going to force that into the production of the bud, and the production of the flower, which is later killed by the frost. Isn't it to our advantage to keep the soil in such condition during the previous year as to prevent the storing up of this food, so as to hold back the flowering of the plant?

Professor Selby: I will say that when we do that we prevent the formation of the flowers. The flower buds are really the last to form.

The plant never wastes that energy on reproductive processes in ordinary life until a living food supply has been all laid up.

Mr. Riggs: Doesn't this stored up plant food go to produce the flower?

Professor Selby: Certainly, but in the actual preparation of the year before the flower is about the last thing, and the plant's habits are adapted to our normal conditions, so at times when our conditions are very abnormal, the plant suffers, and of course if we could overcome the effect of temperature in these warm spring months, we could do more than we can yet. We can, however, overcome that as between cold soil and warm soil, but it is only between rather narrow limits.

Mr. Pierce: What do you propose to do about the absence of sunlight?

Professor Selby: I propose to have the weather man give us a better opportunity next year.

Mr. Montgomery: In reference to asparagus, how do you account for the statement that the leaf is necessary for the formation of starch, that is, everything has to come to the leaf? How do you account for the fact that the application of nitrate of soda increases the cutting of asparagus? I don't just understand what you said about the roots. Are the feeding roots these large roots that run way down into the soil? Are the feeding roots or do they simply perform the function of anchorage, the simple function of anchorage, and conducting tissue? Are the roots that have fine branches the feeding roots? Aren't the feeding roots nearer the surface?

Professor Selby: The largest supply of them.

A Member: Have you ever noticed on your fertilizer plot near the Station whether years when the sunlight is deficient that your per cent. of increase for applications of fertilizer as compared with your check plot is greater than in years when the sunlight is normal? In other words, does the application of commercial fertilizers increase the amount of food that is in the water that is carried to the plant, and so, if we have only one day of sunlight, that increased amount that is carried up that one day will show a marked greater increase as compared with the plant that did not have the fertilizer, whereas if you had a number of days for carrying that up from the check plots you have greater growth from your check plots?

Professor Selby: With respect to the fertilizer feature I cannot answer it. It is my impression that in wheat it has been a long time since the unfertilized plot yielded as high relatively as this year, and I explain that by abundant water supply and rather low temperatures, which seemed so favorable to wheat, broadly speaking. In the matter of the asparagus, the reserve food supply of the asparagus plant is a matter of root. It has a very extensive root system, and in these underground parts is an enormous storage, but I am not aware that applications of nitrate of soda would in the end increase the cutting, providing the asparagus was not allowed to reproduce leaves later in the summer, and prepare for the next year's cutting. I would not expect that nitrate of soda applied in the spring just before the cutting would increase the cuttings, although that might be within moderate limits, but if so, it would be at the expense of the reserve laid up in this case in the root stalks.

Mr. Pierce: These stalks you produce to cut, isn't the food right in them?

Professor Selby: Yes, that is true. We cultivate asparagus for the purpose of robbing the plant of what it has laid up the year before. That is all. The plant is trying to come up and produce leaves, and we cut it off and rob it of the reserve.

Mr. Pierce: How would it stimulate it?

Professor Selby: Only by acting on the leaves that are brought later in the summer. The fact is it does increase the cutting. We have there the introduction of a stimulus on cell multiplication at the expense of the reserve, but all of it at the expense of the reserve.

Mr. Montgomery: It is a stimulant instead of a food?

Professor Selby: It would act so in that case undoubtedly, because the asparagus without any mature leaves is not getting any food from the sunlight, it is simply using its reserve.

Mr. Pierce: How does it act on beet seedlings or lettuce?

Professor Selby: There it would act as food, too.

Mr. Tussing: I want to ask if mulching apple trees at this time of year would have a tendency to retard flowering in the spring, the blooming of the trees in the spring?

Professor Selby: Well, the effect of mulching of course is to keep down the soil temperature by keeping up the soil water supply, and it would be true within certain limits. But when we have the extreme limits of a year ago where temperatures ran up so high, there is very little difference in my judgment, but when we have normal conditions you must remember whenever we cause to be laid up an increasing amount of stored water in the soil, we are laying up the means of keeping down the soil temperature.

Mr. Shirer: At Delaware I told the Professor that he would soon get on the right track, and he made the reply that because we were studying some is the reason we could comprehend him. I am glad he is still improving, and I am glad I am still studying myself, and I believe if he keeps on, pretty soon we will have proper physiological botany.

Mr. Knellinger: Down through our section we found this fall—we cut a shock of corn today, and twenty-four hours afterward we cut another one that had been frozen in that time. The one that had not been frozen got pretty well ripened up. The one where the corn was frozen twenty-four hours afterward is not ripe yet. I think that if the Professor will enlighten us somewhat in regard to this we may be able to deduce from it that we had better cut before the frost, even though the corn is not quite ripe, and we might be benefited a good deal by it.

Professor Selby: I do not know just what the difference is in its effect on maturity as between sudden death of all of the tissues by freezing and gradual death through water loss by cutting, but I suspect there would lie the fact that when the corn is cut there is a gradual water loss, and with this loss there are some changes that would go on normally with much accelerated speed. In the other case, the tissues are killed by the frost and the water loss is simply as though it were dead or inert tissue.

Professor Davis: Has Professor Selby any data, specific or general, to give us any idea as to the time during the previous season's growth when the nature of these buds were determined, that is whether they are fruit buds? It seems to me if we could understand that this change takes place, and in general when it takes place, we would better understand the relation of the buds of this year to the next season's crop.

Professor Selby: I have not any specific observations.

Mr. Shirer: He is going to give us that the next time.

Professor Selby: It takes such a large amount of histological work to get it out. There have been works bearing on this in relation to the development of flower clusters in herbs and in one or two species like horse chestnuts, and those tracings have been made out. I think there is a recent publication tracing those in one of the botanical journals, but even taking all of them together, whether that would apply and help us out on fruit trees, I cannot say. There has been a little of it with reference to general histological work.

Mr. Riggs: I am not thoroughly satisfied with the answer in regard to the mulching retarding the flowering of the trees. We know we can whitewash the trees and retard the flowering period from five to nine days. Now then, what is the effect of putting the mulch on at this time of the year? Can you retard it any?

Professor Selby: The whitewashing of the trees reflects the sun's rays and prevents the absorption of heat by the branch; that is, it prevents the rise of the temperature of the branch and the bud to correspond to the atmospheric conditions. That is a good deal more than root influence can ever do, and while you can keep down the soil temperature, and while if we do not have excessively hot days, that soil temperature will be reflected in your tardy development, when we come to having a wide range between atmospheric and soil temperatures, that is where it gets beyond our reach.

Mr. Pierce: Can you give us any help about putting out hotblooded varieties from the nursery to the field? We often put them out too soon, and we do not gain anything, for the transition is too sudden. Can you help us along that line?

Professor Selby: I am afraid I cannot help very much. That is, that suppresses the plant's foliage. There is too sudden a transition. It is a pretty hard proposition, a very difficult proposition, a proposition not very far from that concerning the tomato fields this year. The fruit was there, but would not ripen. It hung a long, long time before it would ripen, beyond the normal period.

A Member: The plants held on a long time before they would grow.

Professor Selby: That is true, too. I think as a rule we do not have much difficulty provided the conditions out of doors set up a rapid transpiration. The slow start is owing, ordinarily, to the fact that the plant activity is not excited. When it stays there dead without the stimulus of the transpiration stream—it often goes with a highly charged condition of the atmosphere as to moisture, and that means high humidity, and usually low temperature.

Professor Green: It is quite likely we cannot keep back the growth of trees by mulching to any extent, but it is quite likely we can with strawberry plants.

Mr. Pierce: They are protected from the atmosphere.

EVENING SESSION.

Meeting called to order by the President at 7:15 p. m. in the Assembly Room of the Columbus Board of Trade.

The President: We will now take up some of the remaining questions. I will ask Mr. Gill if he will answer question No. 9, "Have any of the new peaches any commercial value?"

Mr. Gill: Whether a peach has any commercial value is a sort of a relative question. To say a peach has no commercial value would not necessarily mean that it would not make its owner some money, but it relates to the question whether there is some other peach ripening at the same time that it is ready for market that fills the bill better. Now if we have a good peach business on certain days in September with peaches that are filling the bill and are profitable, another peach to come in and take the place of it at that time must be a superior peach to that which is ripening at that time, or at least equal to it, to get a foothold and to be recognized, and get into horticultural history, or else it must drop out, so a peach that is competing for a place must outclass any other peach that is ripening at that time. To say a peach has a commercial value does not mean that it shall be the best peach on any man's list, because a peach that ripens at one time in the year may not be nearly so valuable as those ripening at some other time during the harvest season. I do not know of any new peach that just fills those conditions. I think every fruit grower should be experimenting a little along this line. He should be trying something new, because here is the esthetics of the business, experimenting a little, trying something new. All our work is not to get returns in dollars and cents, and we must do something for the good of the trade, and our own amusement. We must have some fun going along. We may have some failures, but it is for our good, and gives us some amusement. I am trying some new varieties. I am trying the Willett, which I have a good deal of confidence in from the recommendations. That is a yellow peach that ripens right after the Elbertas. I am trying the Motlow, which is a new one that has just sprung up in Tennessee, and the Slappey. So at some future time I hope to report on those three. Two of our principal fruit growers have been making money out of the New Prolific, and they recommend it highly. It is doing finely for them, but we haven't had enough experience with it to say that it has any commercial value to any great extent.

A Member: I should like to hear the gentleman's list of commercial peaches of all kinds he is growing now.

Mr. Gill: Some of the list of peaches that have a commercial value have a very wide range. Some peaches will grow in a great many different territories. The peach which will do that more widely than any other known, I guess, is the Elberta, and that is what has given it its great reputation. It flourishes in Georgia, where it originated, and up to the Lake, and I suppose over into Canada. I have not heard of a place where it will not grow and make money. A peach which will do that may be stamped as the most wonderful peach brought forth. In our orchard we have the Smock, the Salway, the Lemon Free and the Elberta, and I do not know of any other peach that will do us any good, and with those we pretty nearly fill our peach season. There are early peaches. The Early Rivers is one of the best of the early varieties, but on our farm we do not grow anything that ripens earlier than the Elberta, because I am a plum grower, and I won't have anything that comes in the way of the plum harvest, and I have not had any experience with the early peaches. There are some better peaches than those I have named in the earlier varieties. This Prolific that I spoke of just precedes the Elberta. The Crawford is a peach that is very choice as to where it will grow. I cannot grow them at all, but my brother, Mr. Miller, has made much money out of the Crawford just a mile away. I can't do any good with it. I would not give you a dollar a hundred for Crawford trees to put on my land, because they won't grow for me, but they have a great reputation. The land I grow these on is a flat black land with a clay subsoil, and those varieties prosper on it.

A Member: What kind of soil is best down there for Crawford, a clay or a gravel soil?

Mr. Gill: A clay knoll. They do pretty well, I think, in sand knolls, but not on flat black land. They want a very dry place.

A Member: You spoke of the Smock. Is there but one kind of Smock?

Mr. Gill: That is a disputed question. If you would ask Mr. Miller that question, he would say there is but one kind, depending on the cultivation. I think there are two, the Jersey Smock and the Beers. The Jersey Smock is a good bearer, bears a very fine size. The Jersey Smock is a smaller and more prolific peach.

The Secretary: I do not know whether the Carmen has been mentioned or not. While not strictly a new peach, it seems that it is the best of its season. It has proven that to be so, and is giving great satisfaction. It is more resistant to rot, is quite productive, and comparatively hardy.

A Member: What is its season

The Secretary: Just a little later than the Early Rivers, I think.

A Member: It precedes the Elberta then?

The Secretary: Yes, decidedly. It is something like the Champion, a comparatively new variety that follows it a little later, and is a little larger, and more liable to rot. The Champion is a poor shipper. We have a good market for it, but it is hard to take it to market. The trees are hardy and productive. The fruit is large and fine; it sometimes does not color the best, and it rots badly.

A Member: Mr. Gill, you spoke of the Crawford. Did you mean the late or the early?

Mr. Gill: The late.

The President: We will now ask Mr. Waid to answer question No. 11, "Will it pay the average land owner to grow posts for fencing, grape trellises, telephone, etc.?"

Mr. Waid: It will pay the average land owner to grow such of these trees as he may have need of, providing he has more land than he can till to advantage, or has waste land that he can devote to the fast growing trees, or if he has need of a grove or row of trees as a windbreak for his building.

Mr. Peterson: What distance should locusts be planted apart?

Mr. Waid: The Station is making tests along that line, and is planting some of the groves eight by eight, and others closer one way and farther the other, five by ten. There are advantages in both ways, depending somewhat on the lay of the land, and your local conditions. But do not plant much closer than that.

Mr. Peterson: Is five by six too close on a hillside?

Mr. Waid: Under certain conditions perhaps that would be all right, but it is advisable, as a rule, not to get much below fifty square feet to the tree.

Mr. Baker: Would you advise planting catalpa in a woodlot in the shade? We nearly all have woodlots, and in places there are vacancies and places to fill up where we could not cultivate at all.

Mr. Waid: That question has not been settled fully as yet. The Station is working on that problem also. It is rather difficult, as a rule, to get trees started in the average woodlot where there is quite a stiff sod. If the shade is not too dense and the sod is not too stiff, conditions which are not usual, they might start, but under ordinary conditions I have not seen very good results in planting in the woodlots, although it is perhaps as good as almost any other tree.

Mr. Gill: I have planted some in the woods this year, and I notice they have not grown nearly so well as those in the nursery not yet transplanted, but I have 3,000 trees, and I am going to put them in, a part as a windbreak for the house, but the rest of them—I haven't anything else to do with them, and I am not going to burn them—I am going to put them in. If they don't get big all right, and if they do all right.

A Member: This woodlot that we have, we allow no stock in it; there are a lot of raspberries and blackberries, and there is not much sod there. Would it be all right to plant in there without grubbing out these briars?

Mr. Waid: Yes. Those conditions are more favorable than the sod, and if they will do well anywhere, I should think they would do well there.

Professor Lazenby: If the open spaces are quite light, as we happen to have one in the corner of our woodlot, where there is a fair degree of light, the catalpa seemed to be growing there pretty well. I think it is a question of shade as well as of sod, and so on.

A Member: Isn't it a question of fertility, too?

Professor Lazenby: Certainly.

Mr. Tussing: I have in mind a mile of roadway where catalpas have been planted, and there is no shade there whatever, but I think those trees are dying for want of moisture. They are planted in stiff sod, and have no attention whatever. My impression is that they are dying for want of moisture. They are making scarcely any growth.

The President: We will next have question No. 8, "What new strawberries shall we test?" answered by Mr. Ballou.

Mr. Ballou: I do not know of any that appeared in the season of 1907, which I would like to recommend to planters. However, there are about three which it would be well to mention. The Virginia is practically a new variety. It has been on the market one or two years, and it is different from the other first early varieties in that it is an imperfect blossomed variety. It is wonderfully prolific, and for the first two pickings the ground is fairly covered with bright crimson, fairly good sized, round fruit. I think there could be two good pickings, profitable pickings, from this early variety, and after that there would probably be no profit at all.

A Member: What is the quality?

Mr. Ballou: Fairly good. It is better than the Excelsior; I do not think as good as the Gill. Another one we tried was the Buster, and it is a buster in both size and prolificacy. However, the pickers report that they are very hard to pick. The calyx adheres very tightly to the stem, but that is no objection, as the proper method of picking is to clip the stem with the thumbnail and pick it. Another promising berry for the grower who would like something fancy, is the Chesapeake, a very large, fine looking, firm berry of good quality. I do not know how prolific it will prove to be when it is tried on a larger scale than we tried it this year, but I like the appearance of it from a berry grower's standpoint.

A Member: Is it a perfect blossomed berry?

Mr. Ballou: Yes, it is a perfect blossomed variety.

A Member: Has it a neck?

Mr. Ballou: You could not call it a necked variety. Of the varieties that we tested prior to 1907 of the newer sort, I should still recommend trying the Gill, which is one of the first early varieties, and the Highland Seedling, I understand, will come out this spring. If it is introduced, I certainly should like to have the berry growers give it a trial. It has done exceptionally well on the Station soil. Another one, when it becomes available to the public, is the La Belle. I think that is a very promising variety, as is also the Wyoga. Neither is on the market yet, but I think they are promising, and I should like to see the growers try them in a small way when they get on the market.

Professor Lazenby: What would Mr. Ballou recommend as a fertilizer, and an accompanying variety for the Virginia?

Mr. Ballou: Well, either the Excelsior or the Gill, I think, would serve very well in that capacity.

The President: Mr. Ballou, will you now answer question 18, "Is hill selection of seed potatoes practical?"

Mr. Ballou: This hill selection is rather a complicated affair. I have a report in figures which I will give of the four season's work in potato selection. These are figures exhibiting the four seasons' results of hill selection of potatoes, begun at the Experiment Station by Professor Waid in 1903, and continued by me in the years 1904, 1905 and 1906.

SELECTION WORK IN POTATOES.

F. H. BALLOU, ASSISTANT HORTICULTURIST, O. A. E. S.

Figures exhibiting the fourth season's results of hill selection of potatoes begun at the experiment station by Prof. Waid, in 1903, and continued by him in the years 1904-5-6.

The nature of the work taken up by Mr. Waid, who reported its progress up to and including the season of 1906 to this society, was the selection of individual hills of potatoes, showing marked characteristics and endeavoring to find, by planting in separate rows and careful comparison with check rows planted from common stock of the same varieties, whether the progeny of these individual hills would exhibit the same superior qualities.

The specific qualities considered in the original hill selection were: first, marked or unusual prolificacy; variety, Carman No. 3. Second, blight or disease resistance; variety, Whiton's White Mammoth.

In the spring of 1907, after careful comparisons and records had been made and kept by Mr. Waid for three seasons, the progeny of the original hills having been all the while kept on a separate, individual hill basis, the seed stock was turned over to the writer for a field test to determine whether the results which had been secured in the hill-row work would be borne out on a somewhat larger scale—in just such a test as that to which a careful, practical potato grower would subject the different strains.

A great number of individual hills of the superior strains were available; also a large number of individual hills grown from the common stock.

In the 1907 comparison of the high with the low yielding strains of the Carman No. 3, 70 select hills of the high yielding strain were thrown together; these weighing 94 pounds. Seventy of the poorer hills of the common stock were likewise thrown together, these weighing 36 pounds. From these composite seed lots of the two different strains, the tubers for planting the test rows were carefully selected. The tubers selected from one seed lot were as nearly uniform in size and weight with those from the other as it was possible to have them. This meant the discarding of the larger tubers in the selected strain and the smaller tubers in both the selected and common strains. In this manner sufficient seed was secured to plant three rows of 180 hills each of the choice strain and two rows of the same number of hills of the common strain. The five rows were planted alongside, the two strains alternating—two rows of the selected to one of the common.

The difference in the vigor of the two strains was apparent soon after the plants were above ground, and continued to be more and more marked as the growing season advanced. The high yielding strain, from its superior vigor, was more resistant to the generally prevailing "tip-burn" or sun-scald than was the common strain. Outside of this difference there was no appreciable difference in the time of maturity of the two strains.

The results in yields were as follows, on the basis of one acre:

High yielding strain of Carman No. 3	181.9 bushels.
Common strain of Carman No. 3	116.15 bushels.
Difference in favor of the selected strain	65.75 bushels

The hills had been counted and the calculation made on a corrected stand of 10,890 hills per acre.

The work with the disease resistant compared with the common strain of Whiton's White Mammoth was taken up on the same plan as with the high and low yielding strains of Carman No. 3, with the exception that the available composite seed stock of each strain was larger than with Carman No. 3. Eight rows of 180 hills each were planted with the disease resistant strain, and four rows of the same number of hills with the common stock.

The same difference throughout the season between the two strains was noticeable even to an unobservant person. The plants of the common strain were dead and dry and the crop ready to dig three weeks before the resistant strain, which remained green, vigorous and growing until they went down under the series of hard frosts which overtook them.

The results in yield, on the basis of one acre, and from a corrected stand of plants are as follows:

Disease resistant strain of Whiton's White Mammoth..	206.9 bushels
Common strain of Whiton's White Mammoth........	153.5 bushels
Difference in favor of the selected strain............	53.4 bushels

It will at once be observed that in improvement in yield the results from selection in the hill for heavy yielding qualities and the selection in the field of plants, of hills showing great vigor and unusual ability to stand up green and thrifty during a long growing season, gave quite similar results. In view of the possibility that there is a slight variation in season of maturity of different types of the same variety, the question occurs to us—is not selection in the hill, for actual results in yield, preferable to selection in the field of growing plants which exhibit unusual ability to stand up through a long growing season? This might tend to develop strains of that variety which, in some sections at least, might require a too long season to mature. Selection in the hill, where prolificacy and early maturity were combined, would give results more satisfactory to the majority of growers.

The Secretary: Have you ever given any thought as to what would be the best method of doing this? Almost all the larger growers, you know, dig with a machine, and that complicates the problem of hill selection.

Mr. Ballou: Hill selection cannot be made where a machine is used for the digging.

Mr. Pierce: They could be taken out before by hand.

Mr. Ballou: That would be the only way.

The Secretary: And then you cannot always tell until they are dug.

Mr. Tussing: It would be necessary to mark the hills in that case before they are ripe.

Mr. Ballou: I do not know about that. I think it would pay the grower to go through his field, and make tests to learn if he had to dig a portion by hand in order to get this superior strain.

Mr. Montgomery: Were you talking about hill selections for productivity?

The Secretary: More especially for productivity, as this paper dealt with that.

Mr. Montgomery: We practiced it two years with one variety, and the only way we figured out was to take so many rows and dig them all. We just took a row all the way through, and then went along and picked out the best hills. We tried to select fifteen to eighteen bushels of seed stock. We figure that after we have selected three years, then we can begin to count on enough to plant the whole field, and call it what we would call an improved breed, if you please, but still we expect to continue the small section for a breeding plot for some time.

The Secretary: In other words, after three years, you think the type will be so well fixed that it would not need any selection for the general planting.

Mr. Montgomery: I would count on it, but I would continue the selection in a small way.

Mr. Waid: It seems to me that in the case of selection for yield in the hill, it would not be advisable for anyone who cannot devote considerable time to it to go into this line of work, but where you have an ambition to get a strain that you cannot only use yourself, but sell to someone else at a fair value, I believe that it is worth while to do it, and if you have such an ambition the best way, it seems to me, to get at it is to work in co-operation with the plant breeders. They have a plan and are working out a selection of the potato in this way, and I believe your co-operation would assist each one who is trying to get such a strain and would also be valuable to the plant breeders.

A Member: I want to go back to the strawberry just a moment, if you will permit. I want to ask Mr. Ballou about the Sample. It is not a new variety. We have been growing it for several years in a small way, and the longer I grow it the better I like it.

Mr. Ballou: We think a great deal of the Sample berry. This last year was a Sample year decidedly, and we had some very fine berries. Its greatest weakness seems to be a weakness of the plant, its liability to blight, but that was not so marked this year. The Sample and Senator Dunlap certainly make a worthy team.

A Member: The Senator is pretty early for fertilizer, is it not?

Mr. Ballou: They do very well. We had some culture tests this year, and the Sample was very successful with the Senator to fertilize it.

The President: The next question is No. 5, "What is the best material to grow for mulching strawberry plants?" to be answered by Mr. Scarff. I do not believe Mr. Scarff is here.

Professor Green: I tried growing sorghum quite successfully, and I do not know of anything much better than that. Growing it thickly, it makes good mulching material.

Mr. Montgomery: How did you mean to grow it, on the old strawberry bed?

Professor Green: I just took the question as it is.

Mr. Montgomery: There was a question last year, "What material can be grown on old strawberry beds after harvest to mulch the new strawberry bed?" I undertook to try three crops, buckwheat, Japanese millet and German millet, but like many other things the experiment was not as successful as I had hoped. I got them planted a little late, and they were not very good. I did not succeed in growing much material, but I liked the buckwheat, because you can sow with it the crimson clover, and that makes a pretty good crop, and you can cut the buckwheat so that it will give the clover a good chance to come in. Of the two other crops, the Japanese millet will give the most material.

Mr. Miller: Last summer I saw in the truck region near Norfolk, Virginia, places where strawberries were grown in wide rows in the matted row system, five or six feet apart, and on each side of the row were thickly planted cow peas. They were just at that time coming up, were perhaps eight or ten inches high, and in that fertile soil where they use so much fertilizer, it would before winter make a rank growth. It occurred to me it might be desirable to try it.

The Secretary: I tried this year sowing corn, about three bushels to the acre, sowing it after mowing the meadow, which would be as late as it need be planted. I secured a fine quality of mulch. That fodder lies nicely, but an acre of that sowed fodder would not cover an acre of strawberries, and I thought it was pretty expensive. It has occurred to me that where land is plentiful we might adopt some such plan as Mr. Miller suggests, make the rows some distance apart, and sow cow peas or beans in the center, and still cultivate between them. I do not believe it is advisable to grow any crop in the strawberry that will interfere with cultivating the strawberry in the fall. The leguminous crop would benefit the strawberry, and in falling down would cover them considerably.

Mr. Riegle: When was the sorghum planted?

Professor Green: It should be a little later than corn. It would be well to give it the entire season, but of course it is impossible to plant it so very early, because it would be in the way.

The President: We will now start in again on our program, and the first that we have is the report of the meeting of the American Pomological Society by Professor Lazenby. I suppressed Professor Lazenby's paper yesterday. I had it in my chair sitting on it, and he couldn't find it.

THE HORTICULTURAL MEETINGS AT JAMESTOWN.

PROFESSOR WILLIAM R. LAZENBY.

The week of September 23-28, 1907, was an important one horticuturally at the Jamestown exposition. There were held during this week upon the exposition grounds, (1) a so-called "Congress of Horticulture;" (2) the 30th biennial session of the American Pomological Society; (3) the fifth annual session of the Society for Horticultural Science; (4) the summer meeting of the Maryland State Horticultural Society, and (5) the American Nut Growers' Association.

Each of the above organizations had an elaborate program. The Congress of Horticulture had three sessions. The first was devoted to cultural problems, plant breeding and propagation; the second to commercial growing and local horticultural conditions, and the third to general subjects of national scope.

Among the speakers on the various divisions of the topics just mentioned were Messrs. F. H. King, H. J. Webber, W. W. Rawson, F. A. Pierson, L. A. Goodman, F. W. Rane, E. J. Wickson, A. C. True, Warren Manning, B. T. Galloway, J. C. Olmsted, W. H. Taplin, J. C. Vaughn and others almost equally well known. This congress was arranged and held under the auspices of the National Council of Horticulture. The interesting topics discussed were treated in a general way, the aim being to show the present status of our knowledge of these subjects and to point out just where we stand as horticulturists in reference to the most advanced scientific investigation and discovery.

The National Council of Horticulture consists of eight delegates at large and two delegates each from the following organizations, viz: Society of American Florists, American Association of Nurserymen and the American Seed Trade Association.

The purpose of the council, as I understand it, is to provide a more or less permanent advisory body, made up of representatives from the various national horticultural organizations now existing. It is expected that such a body will exert a wholesome and unifying influence in horticultural matters that are of general interest which will prove beneficial to horticulturists in general and to the several organizations that are covering and developing special phases of work, such as the American Pomological Society, the Apple Growers' Congress, the National Nut Growers' Association and the various horticultural trade organizations.

It is believed that a representative body of this character will be useful in connection with such legislative or similar exigencies as sometimes arise during the period between the annual or biennial meetings of the existing organizations, as it will be able to act more promptly and effectively than it is possible for existing organizations to do when joint action is necessary.

It is not to be understood that the council proposes to take the place of all or any of the existing organizations, nor that it contemplates annual or other regular sessions with set programs, but rather that it is the intention to provide for holding at such times and places as may be from time to time agreed upon, occasional conferences upon topics of general interest in addition to the meetings of the council itself, which will doubtless for some time, at least, necessarily be held at such times and places as will suit the convenience of the delegates composing it.

The effort which the council has made to stimulate popular interest in horticultural matters through the dissemination of interesting and accurate data regarding the cultivation and use of flowers, ornamental plants, fruits, etc., through the columns of the daily and weekly papers is one that can be strongly approved and is certainly worthy of further development. Systematic work along this line could hardly fail to result in a tangible and considerable increase in popular interest in horticultural work, and a corresponding tendency toward the elevation of both sentimental and commercial standards in this line.

So far as the question of expense of maintenance of the work of the council is concerned, it is not understood that any very definite plan has yet been evolved by its founders. Little expense has been incurred thus far, except for the preparation of matter for publication, and the cost of this has been defrayed by contributions from seedsmen, florists, nurserymen, etc., in the lines most likely to reap pecuniary benefit therefrom.

It is understood that the organizations thus far affiliated with the council have made definite grants of from $100 to $300 per annum for the support of the council. The extent to which the affiliated societies should contribute has not been definitely determined.

As usual the meeting of the American Pomological Society was one of both pleasure and profit. The attendance was representative rather than large, and the program consisted of twenty-five carefully prepared papers, not including many valuable reports from various standing committees. It was a feast of good things, equally instructive and inspiring.

The American Pomological Society, with its 60 years of past history, still stands for the best in American horticulture. It has a membership of a few more than 500, of which 200 are life members, becoming so by the payment of $20 at one time.

This membership represents every state and territory in the Union, as well as Canada, 19; Australia, 1; New Zealand, 1; Japan, 1; Holland, 2; Cuba, 2; Hawaii, 2; Philippines, 1; England, 2; Peru, 1. The states having the largest membership are as follows: New York, 54; Missouri, 48; Massachusetts. 40; Pennsylvania, 26; New Jersey, 24; Virginia, 22; Kansas and Connecticut, 21 each; California and Illinois, 20 each; Iowa and District of Columbia, 17 each; Florida, 16; Michigan, 14; Maine, 13; Ohio, 11; Georgia, 10; Maryland and Minnesota, 8 each; West Virginia and Rhode Island, 7 each; Texas and Wisconsin, 6 each; Arkansas, Delaware, New Hampshire, Washington and North Carolina, 5 each; Alabama, South Carolina and Indiana, 4 each; New Mexico and Oregon, 3 each; Idaho, Louisiana, Mississippi, Oklahoma, Colorado and Arizona, 2 each; Wyoming, Montana, South Dakota, Nevada, Utah and Kentucky, 1 each.

Just think of it! The great horticultural state of Ohio, so poorly represented, standing so low in the list. Fifteen states, including Maine and Connecticut, that each have a larger membership in this the oldest national horticultural organization in the country. Surely this is no credit to the horticulturists of the "Buckeye State." It ought to be corrected. One way I believe we could improve our standing. That is to make a united effort to have the next biennial session of the society meet in Columbus. As the meeting two years ago was held in Kansas City, and that of this year held at Jamestown, points well west and east, respectively, there is no good reason why we should not have the next biennial session, that of 1909, in Columbus. Let us make an effort to have it held here.

To one who has been a fairly faithful member for a considerable term of years, it is always a matter of regret to note the absence of those who have been equally or more faithful. Quite a number of the old veterans were absent from the Jamestown meeting.

Some were precluded from attendance by the growing infirmities of age. Some by business or personal affairs. I certainly missed Hexamer, Ragan, Garfield, Barry, Hale and others. But it was a satisfaction to meet and hear W. C. Strong, one of the charter members, now nearly 90 years of age; it was an equal satisfaction to know that such horticulturists as Brackett, Watrous, Van Deman, Goodman, are still active and vigorous in body and mind, and the interests of the grand old society are not likely to suffer when such men as these are able to be at the helm or keep a lookout on the bridge. These men have ever kept in mind the true object and end of the association, which is the advancement of the art and science of pomology.

It is difficult to select or compare papers where all are of a high standard. Among the more noteworthy and significant was one entitled, "Control of Pear Blight on the Pacific Coast," by M. B. Waite, of the United States Department of Agriculture. Probably no such painstaking, persistent effort to combat, and if possible to locate, stamp out this dread disease has ever been undertaken.

While some progress has been made, the results are not reassuring, and Mr. Waite confessed that "pear culture" in the famous pear belt of the Sacramento valley appeared to be a doomed industry.

Another significant paper was by C. G. Patten, of Iowa. He briefly detailed an experience of forty years in "Breeding Orchard Fruits For the Upper Mississippi Valley."

He emphasized and illustrated his deductions by numerous specimen apples, the result of his own work in cross-breeding. Perhaps I am not in a position to render judgment, but I am willing to express an opinion to the effect that Mr. Patten has done more for the state of Iowa than Luther Burbank has for the state of California.

"Do Present Commercial Standards Promote Fruit Consumption?" was treated in a very interesting and intelligent way by W. A. Taylor, of the Division of Pomology, Department of Agriculture, Washington, and the subject elicited a long discussion.

The three days' program was admirably classified. For example, one session was devoted to "diseases and insects," another to "orchard management," one to "fruits and their improvement." The last session was a historical resume of fruit growing in the southern states. A history of fruit growing in Virginia, Maryland, West Virginia, North Carolina, Georgia and Florida was presented in considerable detail by some loyal representative of each state. The society for horticultural science had a fairly well attended meeting, and a program of fifteen papers, dealing mainly with the improvement of horticultural crops by selection and breeding. The program of the Maryland Horticultural Society was not long and dealt quite largely with peach culture and nut growing.

The exhibit in connection with the Pomological Society was not so large in number of plates, but presented an unusually large number of varieties, especially of fruits and nuts grown in the South.

One of the interesting features to a northern man was the different varieties of grapes of the "Rotundifolia" group. Of this class of grapes the Scuppernong is the best known, but the Tenderpulp, Misk, Memory, Flowers, Eden and other varieties were much in evidence. The exhibition of fruit by the Pomological Society and that exhibited by the different southern states in the horticultural exhibits of the exhibition proper gave one an excellent opportunity to see many of the best distinctive southern varieties.

Altogether, horticulture was well represented at the Jamestown exposition and I am glad to say, what cannot be said of former expositions, that Ohio bore a creditable part in this representation.

Mr. Pierce: I would like to inquire of Professor Lazenby what claims the American Pomological Society has to a national life when you compare it with the Ohio, Michigan and New York Societies. I think it takes rank below them. The very fact that most of our horticulturists do not attend the meetings, the men that have done the most for horticulture, is a sign that they have lost interest in it. It has been taken possession of by young men, scarcely any of them practical growers, and it is my opinion that this Society and the Michigan Society and the Society of Western New York and others outrank it a good deal.

Professor Lazenby: Perhaps for local interest that is true, but I do not understand that any men are withdrawing from the American Pomological Society. There are men that could not be there. It is not, however, because they have lost interest. There was scarcely a man that was active and who could be there who was not there, and those who could not be there very few failed to send a letter or some expression to the meeting. If someone will run down the list of those who are members, and take the men that represent the different states, as I did just for a matter of curiosity, I think you will find that it is a pretty representative list. And I believe that on the whole, to speak of one single organization as representing the horticulture of this country, the American Pomological Society comes the nearest of any that we have. That is my opinion.

The President: We have with us tonight Mr. M. E. Horvath, a landscape artist, from Cleveland, Ohio. He is one of the best men in that line, as I have been informed, in the country. His subject is "Embellishment of Home Ground." We will now have the pleasure of listening to Mr. Horvath.

Mr. Horvath: Mr. President, I thank you for the compliment. I do not know whether I shall be able to come up to your expectations or not, but I shall try. I am sorry I did not come as well prepared for my subject as I would like to, but on account of the illness of my wife I was kept away from the very interesting sessions, which I know I would have enjoyed very much if I could have been present. I have to express my thanks to your Secretary and to your Association for the honor that has been conferred upon me, and I am very much pleased to respond to your call and speak to you on some of the most beautiful things that nature has given us, the trees and the flowers, and the making use of them in connection with our homes.

THE EMBELLISHMENT OF PUBLIC AND HOME GROUNDS.

The embellishment of public and home grounds, known under the different titles of landscape treatment.

Landscape gardening or landscape architecture is the art that seeks the production of the most beautiful landscape effects, ensembling the various objects of interest into a grand whole and harmonious unit.

From time immemorial man has worshipped at the shrine of nature, admiring her beauty and grandeur. They have awakened within him the deepest emotions of pure sentiment and expanded his soul to noble acts and higher things than what is earthly and human.

The tales of tourists to the different points of interest all through the land thrilled us with delight and interest with the narration of the beauty and grandeur of the bold and picturesque scenery of the mountains and canons, the rocks and ledges, the water scenes along the sea coast and the seemingly endless expanse of the plains and deserts, with their interesting and sometimes curious vegetation, awakening within us a desire to visit and enjoy the sights of these places.

Nature indeed is a great master, dominating the evolution and creation of all these things, creating and changing the scenery of the country as time goes on. Her subtle manipulations are the most wonderful things, as she does things without any intent or purpose, not even to please us, and this very thing is the most interesting part in her work.

Landscape art seeks to bring all of these things within easy access to the city dweller and those in the country, so that we may continually behold and enjoy the purest of pleasures in nature.

The fundamental principles of treatment of the home grounds are essentially the same as that of a park or landscape; the aim is in both cases to create and beautify within the limits of the possibilities and requirements of each case, though the embellishment of home grounds differs to a greater or less extent from the embellishment of parks or public grounds.

To find the proper solution for each problem is dependent on the skill of the landscape gardener or landscape architect. I will use the term landscape architect, as in designing or laying out of home grounds the landscape architect's work touches very closely on the border line of the work of the designer of the dwelling; in fact, the dividing lines between the two are delicate and indefinite and sometimes it is hard to determine where the functions of one profession should end and another begin. There are two distinct recognized styles of treatment; the geometric or formal, and the natural or modern style. The formal or geometric system is the oldest and was used for as many as 3,000 years, and there are a great many fine examples in existence even today, especially throughout Europe.

The natural or modern style, aiming at the reproduction of the most beautiful natural scenery, imitates the most pleasing and agreeable forms of nature.

A composite style, consisting of both geometric and natural, makes sometimes the most happy combination, especially if employed in the embellishment of home grounds.

The natural style has the advantage over the formal or geometric treatment, and in laying out or ornamenting a suburban or country home where there is plenty of room, and in some cases, some natural bits of scenery, a little ravine, a brook or a clump of woods or rock, if the designer is alert to take advantage of these conditions he may often include not only these, but any points of interest in the surrounding country by opening vistas to the distant views and shutting out and excluding the views which are undesirable.

There is some individuality to every bit of land and this should be always studied to the minutest details—natural or historical features should be carefully preserved and emphasized.

The scheme of ornamentation should be adapted to existing conditions instead of that of trying to adapt conditions to a scheme of some kind. There should be a unity in the general plan, a wholeness of production, a proper balance of proportion in relation to all the objects dealt with, variety enough to arouse an interest in every detail, and harmony preventing discord by blending the unity of the whole with the variety of detail. The essential qualities of the art being to create and to please.

The beautiful creations along these lines are among the highest expressions of refined taste and intelligence, and the impression it creates is a real pleasure to all beholders. One of the difficulties of the landscape architect in connection with the designing of home grounds is that the owner is often quite prone to consider himself qualified in ornamenting his grounds and thinks he knows just what he wants and even knows how to get it. Under such conditions it is very difficult to realize the possibilities of the place to their full extent.

This is not so, however, where the architect of the dwelling and the owner of the home co-operate with the landscape architect. The benefit of such a relation between designer and client is twofold; the client is satisfied and the designer has the satisfaction of having done his work well and of making of his client a friend and a business asset. Grounds which have been designed and embellished under such conditions never fail to evoke general admiration. I have been told by some of my clients in the past that the fee they have paid me for services of designing their grounds was one of the most profitable investments they have ever made.

The work of the landscape architect is essentially different from other kinds of work. It requires several years of patient waiting before the effects and the intents of the designer are realized. It depends mainly for its means and materials on trees, shrubs, flowers and grass; material which at the beginning look insignificant and unimportant, giving but little pleasure to the beholder. Results must be waited for and the main part of pleasure or interest lies in the hopes and the waiting for the development of the little saplings into sturdy, symmetrical trees, luxuriant shrubs, beautiful flowers and velvety green lawns.

The imagination needed here is a peculiar kind and only the result of much study and practical experience. It remains for the employer to exercise what patience he may and to enter into the views of his landscape architect as best he can, resting assured, as his sympathy with nature increases, and his appreciation of her beauties develops, he will have a greater delight in watching the development of his plantation than any other pleasure he could have.

There can be no fast or set rules laid down in connection with the laying out or ornamenting the home grounds, and it is quite often a question of environment. As each piece of ground has some individuality, so the home grounds, with their garden, etc., should possess an air of individuality—typically of America and, if possible, with the reproduction of some of the scenery characteristics of the locality where the place is located.

We are very fortunate in this country to possess a great variety of plants. The native sylva and flora of most every locality offers a large enough variety of beautiful trees and plants to select from, and the planter with such a variety at his command and such exotics which, through long years of association with the native sylva and flora have been identified is enabled to produce the most pleasing effects. A plantation of such character would be no great expense, owing to the fact that there is no need of pruning. Each additional year's growth brings a greater abundance of bloom and the plantation is best adapted to local conditions.

A ramble through the native woods would offer a great opportunity to the prospective planter, who is in possession of a keen artistic sense, to study the flora and sylva of the locality; and by so doing reproduce the best effects and sylvan charms in his plantations, with such modifications as local conditions may demand.

A character study of each species to be employed in the planting is very essential. Unless we are familiar with the characters and habits of the objects we are dealing with our efforts to design or create would be in vain, entailing not only a useless expense, but the loss of valuable time which cannot be regained.

The variety of material for planting should vary in accordance with the character of the soil and elevations, taking advantage of the situations where the soil is particularly adapted to produce a luxuriant growth in certain plants.

For an eastern or northern exposure a boundary or screen planting, if the conditions of the grounds justify such planting, a very pleasing effect may be obtained by grouping the hemlocks with shad bush, pepperidge, sassafras and American beech, using for undergrowth the witch hazels and common elders, flowering dogwoods, red-berried elders,- mountain laurels and ground hemlocks along the edges of the groups. A screen artistically arranged with these varieties of plants would be very pleasing during the whole year. The hemlock, with its dark green and graceful form, interspersed here and there, with the delicate white-flowered shad bush and flowering dogwood in the foreground, would be most pleasing in the early spring; the pepperidge, with its brilliant red, the sassafras, with its golden yellow hues in fall, the red-berried elder, with its bright scarlet bunches of berries borne in abundance, and the mountain laurel, with its delicate pink blossoms in summer, or the American beech, with its gray bark during the winter; all are interesting, and once planted, increase in beauty from year to year, rewarding the owner with greater abundance of bloom and beauty every year.

For grouping or screening on the south or west boundaries, scarlet and red oaks grouped with tulip trees, paper birches and white pines, with undergrowth of witch hazels, viburnums and bittersweets would also produce very pleasing effects. The dark green of the oaks and the light green of the tulip tree are both distinct enough to create an interest in spring and summer, changing in the autumn to the most pleasing golden yellow and brilliant red . The glaucous feathery green of the white pine and the scarlet berries of the bittersweet with the white bark of the paper birch peeping through the density of the group are also interesting in the late fall and winter. Rock and red maples, hickories, yellow wood oaks, magnolias, sweet gums, larches, wild cherries, elms, sycamores and Kentucky coffee trees may be used to good advantage to build up a body or background, planting the snowdrop trees, Judas trees, crab apples, thorns, native azaleas, dogwoods, clethras, deciduous hollies and native hardy perennials on the borders.

For specimen trees, either for setting of buildings or ornamenting the grounds, trees should be selected with great care. For this purpose such trees are best adapted which possess distinct characters and unusual beauty. The closer the characters and individualities of these trees are studied the more pleasing the picture will be. American elms, combining some of the most desirable qualities, such as great size, strength and graceful outline; scarlet oaks, also of great strength and stability; maidenhair trees, noted for long life; rock maples are of pleasing outline; cut-leafed birches or maples, with their gracefulness, and sweet gums for their distinct form and brilliant coloring in autumn. If the grounds are spacious, a few weeping trees, such as weeping Japanese cherry, Sargent's weeping hemlock or Camperdown elm or weeping European beech would also be very useful objects.

The promiscuous use of weeping trees or freakish growth of any kind very rarely improves the home grounds or landscape, and their use should be discouraged.

The President: Are there any questions that the members of the Society would like to ask Mr. Horvath?

Mr. Scott: I would like to ask the gentleman this question: Suppose we want four or five different trees for shade, what particular trees make the finest, the best combination for shade for a lawn?

Mr. Horvoth: The best ornamental tree in cultivation, or that grows anywhere, is the Hungarian Oak. Mr. Bowditch, the landscape architect, under whose direction I have executed some of the plans for the Cleveland City Park, is a great admirer of beautiful trees, and when I asked him what trees he would select if he had only one tree and no more, he said that if he could have but one tree he would take the Hungarian Oak.

It is a tree of unusual beauty and long life. It is an ornamental tree, and it should be planted in such positions as have need for those qualities. Next to the Hungarian Oak, I admire the American Elm. The American Elm is a tree that excels all other trees growing in combining great stature, elasticity and strength, and in delicate outline and gracefulness, and being a tree of unusually large stature, it throws the shade to a distance, so that you do not have to place it close to a building. It permits the free circulation of air, and it will give exactly the quality of shade which is the most desirable, shade and sunshine that mingle together on the ground. It permits the growth of grass under the tree, and yet you have the tree shade. For a third tree I like the Siberian Elm, which is also a tree of ornamental character. It will live from four to five hundred years. It is rather slow of growth, but it is of very striking appearance. It is not so much of a shade tree as an ornamental tree. The Sweet Gum is another very desirable ornamental tree. It has a very distinct character, rather conical in shape, the leaves resembling the Maple, and it has a very corky bark, and the tree is a very interesting object, even in the winter time when the foliage is gone. In the fall, when the coloring is present, it has certainly great beauty.

A Member: You refer to the ordinary Sweet Gum as it grows in the forest?

Mr. Horvath: Yes, sir, it is a native of the Apalachian Mountains from New Jersey down to the Carolinas.

A Member: Doesn't that grow in Kentucky?

Mr. Horvath. Yes, sir.

A Member: It doesn't grow in the forests?

Mr. Horvath: No. Rock Maple has a very distinct character, and is a beautiful tree. You should not plant it very close to buildings, because the shade it produces is very dense; but at the same time, it is a highly ornamental tree, and there is hardly any tree I could mention as well known as our Rock Maple, and it is admired by many.

A Member: The Sweet Gum you speak of, does it have sweet berries on it?

Mr. Horvath: No, it has a kind of cone-like seed.

Mr. Moore: Is there a distinction between the Alder, the Black Alder, and the Red Berry Elder?

Mr. Horvath: They are two distinct things. I know the Elder and the Alder are distinct. The Alder is what is called technically the Alnus. The Elder is the Sambucus. The Alder is an inhabitant of swampy land. It generally grows in swampy or low land. It has a little cone-shaped seed, something like the birches or the conifers, and the Elder is generally a shrub with us. The Sambucus Nigra of Europe is a shrub of about twelve or fifteen feet maximum growth, but it never reaches that size in this country. Our native Elderberry (Sambucus canadiensis) is closely allied to the Red Berry Elder. The Red Berry Elder grows on rocky slopes, generally exposed to the east.

A Member: You refer to the American Red Elder?

Mr. Horvath: Yes, sir.

Mr. Pierce: I live thirty miles from Cleveland. I am unable to get it to live exposed through the winter, and it very seldom has berries to amount to anything. It grows on my farm in a number of places. It grows best under shelter under the evergreen trees, and it blooms nicely there, but has no berries.

Mr. Horvath. Yes, sir. It is a very beautiful shrub when it is planted with Hemlock, and with it bunches of berries in July it is a great sight. It must be planted where it has the advantage of good drainage. It cannot thrive in a wet soil.

A Member: What is the best street tree for the city?

Mr. Horvath: It depends largely on local conditions. You know there are certain conditions more or less difficult in connection with tree culture in every city. The larger the city and more compactly built up, paved and with the other municipal and civic improvements provided which are necessary really for the public convenience, the growing of shade trees becomes a more complex problem. What I think we should have in every city and town is some sort of a commission that would provide for the protection of trees along our highways and streets. As I observed it, a four-foot width of tree lawn is more the rule than the exception. With you gentlemen here, horticulturists, most of you I believe are familiar with the root system of a tree. The root system of a tree will cover about one-third greater area than the top. Now when the poor tree has a curbstone on the right and a sidewalk on the left, and from three to four feet of space to grow in, and the street is paved, the water goes away like from a slate roof into the streets and gutters, and the tree must starve. In Cleveland there was an attempt made some years ago to plant some Carolina Poplars, and now the people are disgusted with them, and I heard recently that my successor had tried to promote some legislation in the City Council to bar the planting of Poplars. You know the Poplar is a beautiful tree.

A Member: What Poplar is this?

Mr. Horvath: The Carolina Poplar or Cottonwood. It is a very handsome tree. It should be put in a place where it has freedom, a place to grow, and it is a fine specimen, but in the city streets it must starve just about like any other. You know where streets are laid out with grading and paving and various other kinds of improvements, that the surface or natural layer of top soil is all removed and only the deleterious common stuff of clay or sand is left there, and they set the trees there, and they think that when the tree is planted that is the last thing to do. It is all done, and it is impossible to grow healthy trees no matter what species or kind it is.

A Member: Have you the Southern Live Oak on your list for the State of Ohio?

Mr. Horvath: No.

A Member: Do you think it would not grow up here?

Mr. Horvath: I have never seen any of them grow in this locality. It might farther south, but as far south as I have traveled in this State I have not seen it.

Another Member: I do not think they grow much above the frost line. You know the leaves last all the year around.

A Member: What do you think about the Oak for city planting?

Mr. Horvath: While it is of great strength and beauty, I do not consider it the best kind of tree for a large city. For a small town or a small city the Oak may be planted to advantage, and would thrive satisfactorily, but where the tree lawns are narrow and their growing space is limited, hampered by buildings and so on, the Oak is not a curbstone tree. The best tree, I think, for moderate sized trees would be the Norway Maple. For a large, wide avenue the Norway Maple would be a useless tree. It is too small in stature, and other objects such as buildings and other improvements would overshadow it. It is adapted to streets of moderate width and where the buildings are not very tall. The Red Maple would make a very good tree for general purposes, provided there is enough space for it to grow in. The Oriental Sycamore is being introduced in many cities, and we have planted quite a number of them in Cleveland, and where they are not hampered, and do not have the bark whittled off of them they are thriving quite satisfactorily, and I think the Sycamore makes a very satisfactory tree for large cities. The European Elm or the American Elm, either for cities of moderate size, and where the trees have plenty of growing space, would make very satisfactory trees, too.

On streets where the tree lawns are too narrow to grow trees I should advise planting the trees inside the lot line, and in a great many cases I believe the people would have much better satisfaction than having them between the curb and the walk. If we could get our civil engineers to co-operate with us, and if we could make them learn that our shade trees are just as much of value as a municipal improvement on the city streets as their curbstones, pavements, or any other kind of street improvements, and they would lay out their sreets in such a way that the tree lawns would be wide enough, then we could have some very fine trees. You see when a tree is planted in the center of a three or four-foot wide tree lawn, it stands just about two feet from the curbstone. When the butcher or the man who delivers groceries to the house, stops with his horse at the curb, it is just the nicest and most convenient position for his horse to get a meal. You can't blame the horse; sometimes they don't feed him. [Laughter.] He finds something to eat, and he will eat it: but if the tree lawn were six feet wide, and the tree were placed two feet from the sidewalk and four feet from the curb, that would put the tree in such a position that the horse would have to step up the curb to reach it, which he would not often do. It is really a subject that I would like to see everybody interested in, because we have beautiful parks in Cleveland, but we have a lot of poor people who cannot pay street car fare to go to those parks when they have half a dozen or so members of their family that have to go, but if we could have the streets properly ornamented with good trees, we could bring happiness and pleasure and better health to everybody who inhabits the city, because the trees are certainly one of the greatest agencies in the promotion of civic beauty and health, through their function of shading the street. The streets require less sprinkling, and there is one expense that is dispensed with, and by narrowing the pavements, and giving this additional space to the tree to grow in, it would lessen the burden of taxation for pavements. I have suggested this in Cleveland, but cold water was thrown on it just as soon as I suggested it. [Applause.]

The President: I think the members of the Society will have found out that my estimate of Mr. Horvath, when I introduced him, was not too high.

Mr. Scott: I am more interested in shade trees for the farm than for the city. It has been one of my fads for many years, and I have been delighted and interested in what has been said as to the different varieties, and their functions, and the other things said about the trees. Two trees I am particularly interested in as shade trees on the lawn. The speaker has not mentioned them, and I do not presume that those trees are usually found. I have not often seen them. Perhaps you noticed in the Stockman, the last issue, the tree on the frontispiece. That tree is a Tulip Poplar planted about twenty-four years ago, symmetrical in its shape, and the limbs are so arranged that it permits the breezes and the sunshine to mingle in such a way as not to make a dense shade, but still a very fine lawn shade. The other tree is a Narrow Leaf Willow. That was started with a scion about the thickness of my finger and six inches long which was brought from New York. That now has a spreading shade of forty feet in width, and is probably fifty feet in height, with a trunk fifteen or twenty inches in diameter. It is an ornament to any lawn, provided it is put in the right position. It has a very thick, narrow leaf like the Laurel.

Mr. Horvath: When it is the right growth it excels, and is a very fine tree. The oyster-shell scale is very destructive in the locality of Cleveland. We have been trying to dispense with the Willow family as much as possible. I have never seen any place where the oyster-shell scale was so destructive as in our state right in the vicinity of Cleveland. I have traveled through this country in a great many places, but I have to say that I have never seen any larger destruction than what is going on in our locality on account of the bark louse.

Mr. Scott: What do you attribute it to?

Mr. Horvath: Well, they have a wide distribution through the introduction of the Carolina Poplar. They were disseminated in that way, and now they attack the White Ash in the forest and also the Black Ash and Butternut.

Mr. Pierce: It is very bad where I live, and has killed the Lilac bushes, and it is on the Yellow Willows, and they are all killed, and the White Ash all around the woods nearly as big as my finger are completely covered with them. I want to say one word. I am not so strongly in favor of street trees in cities as most everybody else. They destroy the lawn. If you set trees on the front edge of the lawn, that is, shade trees, they shade your lawn so that you cannot have flowers and you can hardly have grass, and I think they are a nuisance in a great many instances. I do not believe it is right for a city or a state to enact a law that obliges you to support a tree in front of your place unless you want to, and that is the way they are in Boston or Washington, and some other places. If the authorities say, "Set out a row of trees," they go and do it. I don't think they have a right to do it and I do not think it is advisable in many cases to set out a row of trees. I would set out a tree or two and let it go at that, and I would leave room for grass and flowers.

The President. We have with us Mr. Root of Medina, Ohio. He is to speak on "Should the tree grower keep bees?"

Mr. Root: Mr. President and Members of the Horticultural Society:—I notice that I am down for a speech on the "Relation of Bees to Horticulture," but I presume my subject as I shall discuss it tonight will relate more to the subject of the relation of bees to pomology. As the subjects are so nearly related, however, perhaps it will do no harm to discuss it from the other standpoint. I have brought my bees along with me, and as I proceed to read my paper, if any of you start to go to sleep, I think I can electrify you at the right time. I carry this little case of bees with me, and I do not think much of it. I put it down in the car the other day, and I noticed a lady draw away from it. I didn't notice it much until another lady or gentleman began to move, and I looked around, and he said, "What have you in that box?" I said, "Not rattlesnakes, but bees," and they all began to move away. The day before yesterday I sat my grip down at the railway station, and beside it this box, and I made the remark to the railway station master, "Will it be safe to leave my grip here?" and he looked at it, and read this sign on the box, and he said, "Perfectly safe; nobody will go near that."

WHY THE FRUIT GROWER SHOULD KEEP BEES.

E. R. ROOT.

A few years ago there existed an antagonism between the fruitgrower and the beekeeper; but I am happy to observe that this has very largely disappeared, because both sides recognize that nature apparently designed that the two should work in harmony, and it therefore follows to a more or less extent that the one is aided by the other. The statement used to be made that bees would break and get into ripe or sound fruit, but the facts of recent years have practically disproved this. In two or three cases, where the matter has been referred to the courts, the bees have been exonerated. The most celebrated case of the kind was that of Utter vs. Utter that took place at Amity, N. Y. The jury was unanimous to the effect that the bees did not puncture sound fruit.

Bees have sometimes been accused of puncturing grapes, but careful examination shows that small birds with a sharp beak, conspicuously the Cape May warbler and the Baltimore oriole, will pierce the grapes early in the morning before anyone is up. The small, sharp, needle-like holes left in the berries are visited by the bees during the day, during which they suck out all the pulp, leaving nothing but the shiveled skins. Thus it is the bees get the credit of doing a mischief that birds have actually made possible. For information on this subject refer to Dr. Merriam, of the United States Department of Agriculture, Washington, D. C.

But it must not be denied that they will visit broken or partially decayed fruit. They will hover over them during a scarcity of nectar, sucking out the juices and leaving only the mere shell of the fruit. Some fruits of this kind have a market value, and when the bees help themselves to them in a wholesale way, as they do sometimes, there is no dodging the fact that a damage has been done. In that case the owner of the bees should reimburse the fruitgrower; but a little intelligent management on the part of the beekeeper will avoid any trouble of this kind. When there is a dearth of honey the bees may be fed near the hives by giving them access to very thin sugar syrup. Means must be provided so that they will not be able to get this food too rapidly. While thus kept busily engaged taking the syrup they will not touch any broken fruit. Where peaches or pears are exposed in baskets, the owner of such fruit should see to it that they are covered with mosquito netting. Neglect to comply with this very obvious remedy should not entitle him to any damages from the beekeeper.

Again, it used to be complained that the fruitgrowers sprayed their trees while in bloom. I am happy, also, to observe that this practice has gone almost entirely out of vogue, for various experiment stations have shown that as good and better results can be secured by spraying before and after bloom.

To administer the poison while the trees are in full flower is a damage to the fruitgrower and to the beekeeper alike. To the first mentioned, because some of the delicate parts of the blossoms are injured, killing the embryo fruit. To the beekeeper because the bees will be poisoned in countless thousands. There is only one manufacturer now, I believe, who recommends spraying while trees are in bloom, notwithstanding that the experiment stations of Ithaca, N. Y., and Fort Collins, Colo., have issued bulletins strongly condemning the practice from the standpoint of the fruitgrower. But I need hardly waste any time on these propositions, for I am satisfied that the audience before me is progressive enough to know what is to their best interests.

But the charge has been made that the bees have been the means of scattering pear blight in the regions where pears are grown largely, notably in central California. In 1901 considerable trouble arose between the peargrowers and the beekeepers of Kings county, California. The feeling became very bitter between the two factions. There was talk of resorting to the courts. The question arose whether or not beekeepers could be ejected from the territory. As president of the National Beekeepers' Association, I was called as an expert to look into the matter and make such recommendations to the beekeepers as might seem advisable after consulting with the fruit men. I found that Prof. Waite, of the United States Department of Agriculture, had given out the statement that bees might, and probably did, spread pear blight in the vicinity. Such authority from so high a source complicated the problem of the beekeeper. After looking over the field and talking with the fruit men, whom I found to be reasonable and gentlemen in every respect, I recommended that the beekeepers remove their bees from the vicinity as a test experiment. This was done, but the pear blight seemed to spread just as rapidly as before. When present on the ground I discovered that young pear trees that had never blossomed and which, of course, the bees had never visited, were as badly blighted as the old trees. It also developed that there were countless myriads of insects of every sort, especially ants, that were going from the old trees to the young ones. It also developed that there were certain wild bees over which man had no control and that the removal of the tame ones did not in anywise apparently mitigate the ravages of the blight.

To make a long story short, the beekeepers and the peargrowers are living together in harmony today. If the bees help to spread the blight, as undoubtedly they do, the removal of those under the control of men does not seem to be able to mitigate the trouble. On the other hand, the pear men seem to recognize that the bees perform a most invaluable service in a cross fertilization of the blossoms. In a paper read by Prof. H. A. Surface, entomologist of the Agricultural Department of Harrisburg, Pa., last December, he made the statement:

"I wish to establish the thesis that pear blight often appears without the intervention of bees, and that as these are not by any means the sole agents culpable for dissemination of such germs, the peargrowers are not justified in condemning the bee and desiring to exclude it from our orchards."

But perhaps on the question of whether the bees do more good than harm in pear orchards where blight is more or less prevalent, there may not be an unanimity of feeling on the part of my auditors. We beekeepers are certainly open to conviction and not desirous of relieving the bees of any responsibility or blame that they justly deserve.

Now, the question arises, do bees perform a valuable service to the fruitgrower in cross-pollinating fruit trees? I believe I am safe in saying before this audience that it will be generally admitted that they do perform some service; but as to *how much* would be a question. On this point an immense amount of data has been offered by scientific and practical men. I regret that my time is such that I will not be able to present all the data at my command, but I will here present for your consideration some statements, not from beekeepers, but fruitgrowers and experiment stations alike. I have made no effort to classify them and will simply present them as I was able to gather them from a great variety of sources.

Prof. A. J. Cook, professor of entomology in 1891, at Michigan Agricultural College, says:

"I tried many experiments last spring. I counted the blossoms on each of two branches or plants of apple, cherry, pear, strawberry, raspberry and clover. One of these, in case of each fruit on each experiment, was surrounded by cheesecloth just before the blossoms opened and kept covered till the blossoms fell off. The apple, pear and cherry were covered May 4th and uncovered May 25th and May 19th. The number of blossoms considered varied from 32, the smallest number, to 399, the largest. The trees were examined June 11th to see what number of the fruit had set. The per cent. of blossoms which developed on the covered trees was a little over 2, while almost 20 per cent. of the uncovered blossoms had developed."

J. C. Gilliland, who, in the summer of 1893, in a large field of medium red clover that came within 30 feet of his door, covered some blossoms with netting, and around others *not* covered, he tied a small thread. During the following August he gathered seed from the covered blossoms and also some from the plants not covered; and by carefully counting the seeds he found that the latter gave 21 per cent. more seed. His experiments were repeated again, with like results.

Mr. J. F. McIntyre was a delegate at the California State Fruitgrowers' Association for 1893 and reports that

"A gentleman stated that he had a friend in this state who started into fruitgrowing several years ago, locating 35 miles from any fruitgrowing section, or where any bees were located. The first year that his trees blossomed and in expectancy of at least some returns from his orchard, what should be the result but complete failure! He was advised to procure some bees to aid in the fertilization of the blossoms. He did so, and since then his orchard has been productive."

C. J. Berry, one whose fruit orchard contains 440 acres, and who at the time was horticultural commissioner for Tulare county, California, an inland county that has made great progress in the fruit industry, give this valuable testimony:

"Bees and fruit go together. I can't raise fruit without bees. Yes, sir'ee. I have bees all about my big orchard. Two years in succession I have put netting over some limbs of trees; and, while they blossomed all right, nary fruit; while on the same tree, where limbs were exposed to the aid of bees, plenty of fruit."

Some three or four years ago, in the state of Michigan, a convention of fruitgrowers and beemen assembled together for the purpose of discussing their common interests; and the fruitmen acknowledged generally that the keeping of bees in the vicinity of their orchards was an important factor in the production of fruit.

Chas. A. Green, for the Fruit Grower, published in Rochester, N. Y., writes:

"It has now become demonstrated that many kinds of fruits, if not all kinds, are greatly benefitted by the bees and that a large portion of our fruit, such as the apple, pear, and particularly the plum, would be barren were it not for the helpful work of the honey-bee. This discovery is largely owing to Prof. Waite, of the Agricultural Department at Washington."

Mr. F. A. Merritt, of Andrew, Pa., testifies as follows:

"Our apple orchard is situated in such a way that it is exposed to both the north and south winds. About four years ago, as the trees on the south row began to open their blooms, a heavy south wind prevailed for about five days. I noticed during this period that the bees could not touch the bloom on the south side of these trees, but worked merrily on the more sheltered limbs of the north side. What was the result? Those limbs on the north side were well loaded with fruit, while on the south side there was almost none to be seen.'

Mr. H. A. March, of Puget Sound, Wash., one of the most extensive seed-growers of the Pacific coast, testifies that he found the bees very valuable, and that the seed was very much more abundant when the bees were allowed to work on the flowers.

The editor of the Rural New Yorker put in his paper, unsolicited, this short, pithy paragraph:

"In those great greenhouses near Boston, where early cucumbers are grown, it is always necessary to have one or two hives of bees inside to fertilize the flowers. No bees, no cucumbers, unless men go around with a brush and dust the pollen from one flower to another."

Mr. J. F. Becker, of Morgansville, N. J., has eight greenhouses where he grows cucumbers and attached to each one of which, with an entrance on the inside as well as outside, he has two colonies of bees. He found that without them he could not successfully fertilize the blossoms of the vines, and consequently could get no cucumbers. With them he is entirely successful in growing the finest of cucumbers for the early market, where he gets fancy prices.

A legislative committee of the House of Assembly of Ontario, Canada, in 1892, gave evidence of the agency of bees in scattering pollen. The minister of agriculture summoned not only the leading beemen, but those engaged in growing fruit to present the facts, experiences and the pros and cons on both sides. Not only this, but the scientists were also summoned from Ottawa and Guelph. The horticulturists, with one single exception, admitted the valuable and indispensable offices performed by the honey-bees in the fertilization of fruit-bloom. And this was corroborated and confirmed by the entomologists. Prof. James Fletcher, the Dominion entomologist, said bees did not visit in dull weather, and then we have but little fruit in consequence.

One of the government bulletins, by Frank Benton, for 1894, commenting on the agency of the bees in the fertilization of fruit-blossoms, says:

"The facts they have brought forward are gradually becoming more widely known among fruitgrowers and beekeepers, and additional evidence accumulates. A case illustrating very clearly the value of bees in an orchard has recently come to the notice of the writer. For several years the cherry crop of Vaca valley, in Solano county, California, has not been good, although it was formerly quite sure. The partial or complete failures have been attributed to north winds, chilling rains and similar climatic conditions; but in the minds of Messrs. Bassford, of Cherry Glen, these causes did not sufficiently account for all the cases of failure. * * * To test the matter they placed, therefore, several hives of bees in their orchard in 1890. The result was striking, for the Bassford orchard bore a good crop of cherries, while other growers in the valley who had no bees found their crops entire or partial failures."

Prof. Bailey, the very able horticulturist of Cornell University, writes: "Bees are much more efficient agents of pollination than wind in our fruits, and their absence is always deleterious."

The Division of Vegetable Pathology, of the Department of Agriculture, Washington, D. C., has issued a most valuable bulletin on "Pollination of Pear

Flowers,'" by Norman B. Waite. Mr. Waite says: "Incidental mention has been made of insect visitors. We should not proceed without laying some stress upon the importance of these visits. The common honey-bee is the most regular, important and abundant visitor, and probably does more good than any other species."

Still again, Prof. V. H. Lowe, of the Geneva Experiment Station, New York, in 1899, covered a certain set of small pear trees, as it was not practicable to use large ones, in a hood of sheeting. This hood was large enough to sit down over the whole tree, something in the form of a bag, and the lower end of it was tied around the trunk of the tree. The object of this was to keep out insects, ants, bees and anything, in fact, that might assist in pollniizing the blossoms. On all of these trees so covered there was a large number of buds, and all the conditions were favorable for a good crop, except that the flight of insects was entirely cut off. Now, then, for the results: Out of the whole lot of trees covered, there was just one fruit. On another set of trees of the same sort and size not covered there were 145. In the other case, where it was not practicable to envelop the whole tree, one large limb, for instance, would be enclosed in the bag, the mouth of the bag being tied around the trunk of the limb. In one such instance there were 2,483 buds on an apple tree that were thus covered with the sheeting. Out of that number just one fruit matured. There was plenty of fruit on other portions of the tree where the limbs were not covered. In one case, where the sheeting broke open so that insects could get in, there were 13 perfect fruits from 818 buds. It was clearly shown that bees or other insects play a most important part in the pollination of average fruit trees.

If anyone desires to secure more facts relative to flower fertilization, he can consult "Mueller's Fertilization of Flowers," an authority on the subject.

At a joint meeting of the National Pomological Society and the National Beekeepers' Association, of which your speaker was then president, occurring on September 12th, at Buffalo, a number of valuable papers were read—all of them testifying to the invalualbe office of the bee in pollinating the fruit blossoms. Time will permit me to give only two references. Prof. James Fletcher, of the Ottawa Experiment Station, among other things, said:

"It will be found that not only are flowers absolutely necessary to bees, as the source of their food—nectar and pollen—but that bees and other insects are no less necessary to most flowers, so that their perpetuation may be secured.

"This fact should be recognized by the fruitgrower above all others, for were it not for insects, and particularly for the honey-bee, his crops of fruit would be far less than they are every year, and even in some cases he would get no fruit at all.

"Failure in the fruit crop is more often due, I think, to dull or damp weather at the time of blossoming, which prevents insects from working actively in the flowers, than to any other cause."

At the same joint meeting of bee and fruit men, H. W. Collinwood, editor of the Rural New Yorker, one of the best and most reliable agricultural papers, said:

"We can easily forgive the bee his short working days when we consider the good he does. There is no question about the debt fruitgrowers owe him. People talk about the wind and other insects in fertilizing our flowers; but I am confident that any man who will really take the time and pains to investigate for himself will see that the bee is nearly *the whole story.* I have seen the certain results of his good work in a neighbor's orchard. Those bees "broke the trees" down just as truly as though they had climbed on the trees by the million and pulled at them. The appearance of those trees after a few years of beekeeping would have convinced any fair-minded man that *our little buzzing friends are true partners of the fruitgrower.*"

In addition to all this, I may state that there has been a demand of late on the part of a large number of extensive fruitgrowers of Wisconsin, Michigan, New York state and Pennsylvania, asking beekeepers to locate a few colonies in orchards near which there have been no bees. Indeed, the fruitgrowers have offered to furnish the space and the buildings necessary to accommodate the bees and appliances free of charge to the beekeepers. I may say that the latter have been quick to avail themselves of the opportunity, for honey from fruit blossoms is some of the very finest that is ever produced, and the fruitgrower profits immensely in his turn.

WHY THE FARMER AND FRUITGROWER SHOULD KEEP BEES.

Admitting, then, that bees do play an important part in pollinating fruit blossoms, also in pollinating cucumber blossoms and clover and buckwheat, it is apparent that the fruitgrower, if no bees are kept within half a mile of his place, ought to keep a few himself.

But he may object, on the ground that he is afraid of them; that they are always stinging everybody and everything in sight. This is a mistake. When properly handled, bees are usually tractable. As a general thing they will mind their own business much better than poultry or other farm stock when left to themselves.

But Mr. Fruitgrower will say that he cannot afford to waste any time in handling swarms. He will be willing to keep a few bees—yes, he would be very glad to do so if he could place a few colonies in his orchard without having the "everlasting swarming." I may say that this dfficulty may be very largely overcome; and for the benefit of the fruitgrower who desires to keep bees, not only for the good they may do in increasing his crops, but for the honey that they may gather, it may be well to give right here a method by which he can handle the problem satisfactorily.

Bees swarm primarily because of a lack of room. If, instead of using a single hive, we use one of double capacity, one on top of the other, the swarming tendency will be very materially curtailed. We therefore advise the farmer and fruitgrower to use hives of large size, or else use hives of ordinary size, one piled on top of the other. The bees and queen should be given unlimited room, and they should be run for extracted or chunk honey—not for honey in the little section boxes that one sees in stores. It is assumed that the farmer fruitgrower does not care for honey in sections. For his own family, this chunk honey stored away in large stone crocks will suit his purpose quite as well as that stored in the small boxes seen in the groceries. For that reason the honey should be stored in regular frames or "racks," as some call them, that hold the comb. It may then be cut out and stored in the aforesaid crocks.

At the beginning of the season one story of a Langstroth hive will be enough. Just before fruit blooms open up, another story should be added, containing empty combs or frames of comb foundation. As the season advances, another story should be added. In the meantime a large unobstructed entrance should be provided at the bottom. If the bees cluster out in front they will be almost sure to swarm; so at all times *there should be enough room provided* so they can be kept *inside of the hive and at work.*

Colonies so manipulated may store for the fruitgrower from fruit bloom and clover, anywhere from 50 to 200 pounds of fine honey, which will be worth, at the very lowest calculation, in the form of chunk honey, at the local groceries, not less than 10 cents per pound. It goes to show, then, that in a fair to good season our fruitgrower farmer, to say nothing of the actual benefit of the bees in scattering pollen, may get anywhere from $5.00 to $20.00 per hive. But if the latter figure is reached, the fruitgrower must be willing to spend a little time on the bees—perhaps an hour to the hive for an ordinary season.

But some colonies handled in the manner explained may swarm; but as a general thing there will not be over five per cent. of such swarms. As a precaution in such cases, we would advise putting over the entrance of each colony an Alley trap. This will allow the worker bees to pass out and in freely; but when the queen comes out with a swarm she is trapped in a compartment, because she cannot go through the same slots through which the workers can pass. While the swarm is in the air, the trap containing the queen is taken off, the old hive is removed from the stand from which the swarm came, and another (empty) is put in its place. When we speak of an "empty" hive we mean one containing frames of foundation or combs. The trap is then placed in front of the new hive, now on the old stand. In fifteen or twenty minutes—possibly longer—the swarm in the air will return and go into the new hive, hiving itself automatically. The queen is released from the trap, when she will go in to the swarm. The bees will then start housekeeping anew. In the meantime there has been no climbing of trees, no pounding on tin pans, and no general interruption of farm work. When the swarm comes out, the farmer's wife or one of the children may make the substitution of hives as explained, leaving the farmer in the field to continue his work.

By modern methods it is not necessary that the farmer himself give very much attention to the bees. He can turn that all over to his wife or children: and if he will let them have all the money they can make from the bees, we may rest assured they will soon acquire the art of handling them, and at the same time lay aside a nice little sum of money.

It should be stated in all fairness that there are some seasons when the bees will hardly make their own living. Indeed, they may require to be fed sugar syrup in order to keep them from starving outright. But usually there is only one poor season out of four or five. In the good years the bees will more than make up the cost expended on them several times over.

The keeping of a few colonies—eight or ten—will give very much larger returns per hive than the keeping of a larger number. If the farmer or fruitgrower is located in the vicinity of one hundred or two hundred colonies it will hardly pay him to keep any bees, as he would not stand much of a show. But one in an isolated locality may keep anywhere from ten to twenty-five colonies to very good advantage; and if there is no beekeeper in his vicinity he can hardly afford *not* to keep them, as they will yield him far larger returns for the money invested, one year with another, than he can get from his poultry or his sheep.

(After the reading of his paper, Mr. Root gave a very interesting demonstration with his bees as to method of handling and so forth.)

A Member: At this time I should like to offer a resolution of thanks to Mr. R. J. Tussing for the valuable work he has done as a representative of this Society at the Jamestown Exposition.

The Secretary: I move the adoption of this resolution.

(The motion, duly seconded, is unanimously carried.)

The Secretary: When the report comes out you will hear from the Exposition and our exhibit there.

Mr. Shively: There is a matter of importance that should come before us before we leave this session tonight, and that is the matter of holding the annual meeting at the University grounds, and perhaps I may embody in the motion I wish to make to that end, that to avoid conflict with other meetings we have the horticultural meeting a day later, Thursday, Friday and Saturday. I make a motion to this effect, that this change be made, and that we meet at the University grounds, and that we have our exhibit there as well next year.

Mr. Pierce: Is not that a matter for the Executive Committee?

The Secretary: The suggestion of Mr. Pierce is correct, but the committee would like to get the sense of the meeting on the question.

(There being no further remarks, the motion, duly seconded, was put and carried.)

The President: We forgot to elect an Ad Interim Committee. What is you wish in regard to that, gentlemen?

Mr. Montgomery: I move that the Executive Committee be empowered to appoint an Ad Interim Committee.

(Motion seconded and carried.)

There being no further business before the meeting, on motion, adjournment was had, at 10:10 Friday evening, January 16th, 1908.

OBITUARY.

Since our last annual meeting we have lost from our association the following members: Hon. N. H. Albaugh, whose home was at Phoneton, Ohio.

Mr. Albaugh was engaged in the nursery and orchard business for many years and was always ready to take a part in pubic affairs. His ability to express himself in public was much above the average of men. He represented his county as a legislator in the years of , where he was considered an able and eloquent member, especially active in the interest of temperance laws. He was commissioner of horticulture during the 40 days exhibition in 1888; for the second time the fair being held on the now present fair grounds. He was active in the Montgomery and Miami county horticultural societies and followed Mr. N. Ohmer as president of the former. His interest in many things was diversified and great in many respects. His patriotism was shown by his army record during the Civil War of 1861 to 1865. He was a member of the Grand Army of the Republic and at the time of the national encampment, held at Columbus, Ohio, in 1888, he commanded a division in the line of march in that great parade.

R. H. Warder, who died at Chicago, December 26, 1907, was the son of John A. Warder, the first president of the state horticultural society and the "Father of American Forestry." The son's training was such that he followed along in that line and held a responsible position as landscape gardener and park superintendent for many years.

James Edgerton, of Barnesville, Ohio, died September 30, 1897. His vocation was that of the horticulturist and a recognized specialist in berry growing. He was a Quaker in his religious belief. He is survived by a widow, seven children, twelve grandchildren and one great-grandchild and many friends. For a number of years he was connected with the state horticutural society and other kindred organizations. He died at the age of 79 years.

Mr. Newton Offutt, of Chillicothe, Ohio, was a member of this society and died recently.

Whereas, God in his all-wise providence is no respecter of persons, the high, the low, the rich and the poor are all equal when the summons comes and must obey,

Resolved. That we, as members of the Ohio State Horticultural Society and through the secretary of this association, tender to the families of the deceased members our condolence and sympathy in their sorrow and bereavement.

Resolved: That a copy of these resolutions be spread upon the report and published with the proceedings.

S. R. Moore,
W. R. Lazenby.

IS THE HEDGE ROW SYSTEM OF STRAWBERRY GROWING PREFERABLE TO HILLS OR MATTED ROWS?

M. CRAWFORD.

While hill culture is the ideal method and the hedge row system next, I am compelled to believe that, for the average grower, the matted row system will give the most profit. When plants stand from six to eight inches apart in a wide matted row, each seems to have sufficient room to do its best. If only four inches apart they do well and the crop is produced at a very low price. The up-to-date grower who takes pride in his work will raise his berries in hedge rows and sell them at the highest price. He will have a good yield, too. His neighbor, who grows his berries solely for profit, will have his in matted rows. He saves one-half in plants and planting, perhaps one-half in hoeing, and saves all the work of placing runners and cutting of those not needed. Plants in hedge rows must be protected in winter, while those in matted rows usually protect each other.

W. W. Farnsworth, Columbus, O.,

Dear Sir:—Regarding spraying for shot-hole fungus, will say that living as I do at Clyde, which is noted for its cherries, I have had considerable experience in fighting the disease.

Five years ago I planted out an orchard of 80 acres of sour cherries and I have spent considerable time and money in keeping the foliage healthy.

I find that three sprayings with standard 4-5-50 Bordeaux mixture, if done at the proper time, is sufficient to hold it in check. First, I would go over the trees about May 20th, shortly after the blossoms fall; then the second time, about July 20th, after gathering the fruit, and then again about August 15th. With the above manner of treatment we are able to hold the leaves on the trees until cut by frosts. A. R. PICKETT.

THE DIETETIC VALUE OF FRUIT.

PROF. W. R. LAZENBY.

Fruits in some form should constitute an essential part of our every-day diet for the following reasons:

(1) *Because they taste good and we like them.* I place this reason first because it is the best one that can be given. Everyone in a normal condition enjoys fruit and the natural appetite is a true guide to the needs of the body. Hunger and thirst are sensations wisely given, and when not abused, direct us in the path of health; that is to say, *happy living*, for good health is not only wealth but happiness.

If one has a good constitution, is temperate in habits and leads a clean, wholesome life, his appetite is a guide that may be implicitly trusted. Under such conditions we all like fruit, and should eat it in the serene confidence that the thing you like in the way of food, is the thing you need, and that the thing you need is thing you *do* need.

In satisfying our natural appetite for fruit, if we use such fruits as are well matured, juicy and fine flavored, we reach the highest form of palate or taste pleasure with the least possible digestive effort.

(2) *Because they help to keep our bodies in good condition.*

Our ordinary fruits contain the following substances or compounds in greater or less proportion:

(1) water, (2) sugar, (3) acids, (4) oils and ethers, (5) proteids, (6) pectose, (7) cellulose or vegetable fibre, (8) ash or mineral salts. These substances are all essential constituents of a perfect or well-rounded diet.

While the actual nutrient value of fruit is not high, its dietetic value is very great.

The two qualities which most serve to render fruit wholesome are their acid juiciness and flavor. The juice is largely water, but it contains the sugar and acids of the fruit, and if these are present in large quantities and in the right proportion, the fruit juice is agreeable and refreshing. Flavor also adds to the quality of fruit. The flavor of fruit is due in part to the acids and sugar they contain, but more largely to the volatile acids and ethers.

Fruit acids and ethers when taken into the body have a tendency to lower the temperature of the blood and thus correct or allay any slight feverishness that may exist. They also tend to keep the organs of secretion, like the liver and kidneys, normally active.

The pectose and cellulose of fruit correct a tendency to constipation, and signally aid in keeping the whole digestive tract in an open, healthy condition.

Again, the free acids of fruits are highly antiseptic bodies, and tend to prevent disease germs from finding a lodgment and developing in our bodies.

As to *what kinds* or *how much* fruit we should eat, there is only this answer: Eat the kinds you like and can best afford, and eat just as much as your conscience and good judgment will allow.

When to eat fruit is a less personal question and the following general rules may be of service:

(1) Fruit should be eaten when you eat other food. Although fruit is easily digested, it is not wise to be constantly and frequently putting into the stomach food of any sort. By this practice the strongest stomach may be ruined by the best of food.

(2) When fruit is eaten before breakfast, its cooling and laxative effect is likely to be at its maximum.

(3) Fruit is an excellent thing to be taken with the mid-day lunch. One slice of bread with an apple is better than two slices of bread with no apple.

(4) Fruit eaten after dinner adds largely to the pleasure of the palate, while adding little to the tax upon the digestive organs, which are more likely to be overtaxed when there is no fruit in prospect.

(5) If it is ever desirable to partake of a late supper it is well to remember that a peach, an apple, an orange or a cluster of grapes will be far less likely to haunt our later slumbers than oysters, meat, salads, ice cream, rich cake and other sweetmeats.

THE DIETETIC VALUE OF FRUIT.

Miss Anna M. Noyes.

The value of our common fruits lies not so much in their nutritive quality as in their beneficial effect on the digestive system. The fresh fruit stimulates the appetite and their acids and essential oils, which give them their flavor, aid in the digestion of other foods. People in general eat entirely too little fruit and too much of the heavier and more concentrated foods.

From the nutritive point of view, fruits are divided into two groups, flavor fruits and food fruits. In the former are classed all those containing 80 per cent. or more water. In the latter are those having more than 20 per cent. solids. Of the flavor fruits the most common in Ohio are apples, pears, peaches, grapes, strawberries, raspberries and blackberries. These contain about 15 per cent. total nutrients, 10 of which is carbohydrates and the remaining 5 per cent. is fat, mineral substance and cellulose. From half to three-fourths of the carbohydrates in fruit consists of fruit sugar. This kind of sugar is not only valuable as a food, but is valuable as a diet in the treatment of diabetic patients. The mineral substances found in fruit are of considerable importance, as they help to build up the bone and tissue of the body and keep the blood in good condition. Potash, combined with vegetable acids, makes up the largest per cent. of these substances. In treatment of diseases of the skin, fruit is used largely in the diet and in some cases has been substituted for cereals. The acids of nearly all fruits act as mild laxatives, and at the same time slightly reduce the activity of waste products.

Among the food fruits are the banana, prune, date and fig. These fruits contain much real nutriment; banana contains 26 per cent. and dried dates and figs 79 per cent. and prunes 70 per cent. of total nutrients in their composition. The banana is especially easy to digest, and when cultivated yields a larger food return to a given area of land than any other product. The digestibility of fruit depends largely on the degree of ripeness. The riper the fruit the less cellulose it contains and consequently it is easier to digest. In comparison of the quantity of fruit with other foods, we can say that 1 1-2 pounds of apples, 1-2 pound of grapes, 1 pound of bananas, 1-5 pound of figs and 1-5 pound of dates will each yield as much energy when taken into the system as 1 pint of milk, or 1 pound of potatoes, or 1-5 pound of beans, or 1-5 pound of oat meal, or 1-5 pound of bread, or 1-6 pound of cheese. When it is considered how much cheaper pound for pound than most of the other articles of food fruit is, it will be seen that even the above figures do not do justice to fruit. But even the price and the nutritive value are not good indications of the real value of fruit, but the effect of it on the system and the stimulating effect to the appetie is of much greater importance. Fruit is delicious to the taste, giving a variety of refreshing juices, organic salts and mineral compounds, the latter being essential to pure blood and sound tissue.

Cooking of fruit renders it more digestible by softening the cellulose and also converts the gums into gelatinous forms. The character and flavor are changed and the product is not as refreshing as in the raw state. However, cooked fruits are good substitutes for raw fruits when they are not available. By the addition of sugar the nutritive value is increased and the mineral substances still remain, although they might be changed in composition.

THE DIETETIC VALUE OF FRUIT.

Mr. J. H. Gourley.

The attitude of the general public toward the use of fruit is generally that it is a luxury or that it is simply pleasing to the taste, and therefore, the amount consumed is often governed by such ideas. No matter what impression we may have of the value of fruit as a portion of our diet, the fact remains that there is a real food value in it just as truly as in the meat and potatoes we use daily, combined with the virtue of keeping the system toned up and the digestive tract in good order.

All of our fruit contains:

1. A large amount of water.
2. Sugar, either as grape or fruit sugar.
3. Free organic acids.
4. Protein or albuminoids; this is the equivalent of white of egg in food value.
5. Pectose; this substance gives firmness to fruit and is the same substance that is found in the crust of bread.
6. Cellulose, which is the substance of which the cell walls are formed.
7. Also a small percentage of mineral salts.

Some fruits contain these food constituents in a much higher degree than others. Carbohydrates are usually present in a higher degree than the other principles above named, excepting water. The content of sugar varies greatly, the stage of growth and degree of ripeness having a marked effect on the amount present. In dried fruits the percentage of nutrients is very much higher than in fresh fruit because of the concentration due to the evaporating process.

In experiments on a nut and fruit diet the cost of living was found not to vary greatly from an ordinary mixed diet. The raiser of fancy horses and stock is willing to pay $16 per ton for carrots against $10 or $20 per ton for hay, in order to keep the stock in good condition and vary the diet. If the stockman will do this for his animals, why should we not use more fruit, when we know it will be very much more healthy than the ordinary mixed diet?

The fruit juice consists mostly of water, but is in the most delightful and refreshing form.

The acids are just what the system demands to invigorate it and keep it in prime condition. Malic acid, which is found in apples, is a great germ destroyer, and keeps the alimentary canals in good working order. The salts of this acid are of equal value in keeping the liver and stomach and intestines in healthful activity.

It has long been known that an apple eaten before retiring is one of the best cures or preventives of constipation and is significant in giving a good, clear complexion. Why should we try to maintain or restore health by dieting with the muchly advertised breakfast and patent foods, when there is no truer "going back to nature" than the more abundant use of fruit of all kinds. We should eat them raw and eat them cooked, but never let a day go by without serving fruit in one form or another on the table.

Perfectly ripe (not over-ripe) peaches have been given to typhoid patients with success, when fruits as a rule, are forbidden. This same fruit is often used in serious cases of intestinal disorder in both children and adults. Either fresh or stewed this fruit is laxative and invigorating.

Who does not know the cheer that bright red cherries bring. They are not only effective in relieving fatigue and depression of mind, but are almost a cure in themselves for some forms of bladder trouble.

While the effects of fruits both on the mind and body is unquestioned, we do not advocate their use as a medicine, but as a delightful and highly nutritious food, having the constituents which maintain the life processes, some being almost a perfect food, and the sooner the public becomes enlightened on their value the sooner will doctor bills be cut in two and happier dispositions found in our homes.

THE DIETETIC VALUE OF FRUIT.

Mr. T. H. Parks.

Among the articles of diet which go to make up the food of man, the value of fruit has been too often underestimated.

We see at the very bottom of things in the whole animal creation an instinct which teaches all alike to long after these fruits. This instinct cannot be wrong, but is the way in which nature makes her creatures voice their needs.

The baby in arms screams for the rosy apple and, as he grows into a boy, will defy the cane or even the police to get that for which he longs.

In spite of nature's method, a great mass of people look upon fruit as a luxury, upon which they can only spend odd pennies for the amusement of their children. Many parents will spend more money on injurious or even poisonous sweets, than they will on healthy fruit. Millions and millions of dollars are spent annually upon mercurial and other purgatives, most of which would be quite unnecessary if people would look upon fruit as a necessary article of diet.

Good ripe fruit contains a large amount of sugar in a very easily digestible form. This, when eaten with milk or milk and eggs, makes the most perfect and easily digestible food imaginable.

Fruit is not a perfect food of itself, but should be looked upon as a necessary adjunct.

Cultivated fruits, such as apples, cherries, strawberries, etc., contain on analysis, very similar proportions of the same ingredients, which are about 8 per cent. grape sugar, 3 per cent. pectose, 1 per cent. malic and other acids, 1 per cent. of flesh-forming albuminoids, with over 80 per cent. water. These acids and pectose in the fruit assist in digesting the fats so abundant in meat.

Fruit keeps the body in a healthy condition, and as a promoter of health is of greater value to man than in any other way. This is proven by the prevalence of scurvy among the crews of ocean vessels before the time of cold storage and other modern fruit transportation facilities. As a medicine, fruit should be looked upon as a very valuable ally and a necessity for the vigorating of the various organs of the body, so that they may meet the demands made upon them.

Probably of all fruits, the apple stands unrivaled for general purposes in the household. Its presence should not be overlooked, as in the end it is not only as cheap but cheaper than other foods which are looked upon as necessities.

Our people should use more fruit and they would find it more profitable to do so from many points of view, and much cheaper than doctor bills.

Then, when we have lived to a good old age, enjoying good health, and as we sit by the winter fire munching a juicy apple, we will review the happy days of childhood and think of "the orchard and meadow, the deep tangled wild-wood," for memories linger longest about the "old apple tree" that has often filled the pockets, hats and aprons of happy childhood as they passed home from school.

Here's praise for the orchard and its products.

THE DIETETIC VALUE OF FRUIT.

Mr. G. A. Hood.

Fruit. Of what value is it? Why do people eat fruit? Why do men spend their entire life raising it and producing new and better varieties? Why is the demand for fruit becoming greater every day? These and many other questions may be asked, but the answer to all may be summed up in the words: "Dietetic value."

The value of fruits as a food cannot be overestimated. Every one should eat fruit; first, because of the nutritive value which is received from them, and second, because of the stimulating effect the cellulose has on the muscles of the alimentary tract, causing the food to move along and serving to keep the body clean, thus avoiding many diseases. If more fruits were eaten, less medicine would be used and people would be in better health.

Fruit contains the following substances: water, ash, sugar, organic acids, fats and oils, pectose and cellulose. The salt and organic oils in fruits are beneficial and demanded by the body.

Acid juice and flavor gives one an appetite. Cellulose possibly is the most important constituent, if any one is more important than the others, from the standpoint of cleanliness. The per cent. of each constituent varies with every fruit, but all point to a common end.

The body needs sugar, fat and proteids for its maintenance. Why not use more fruit, deriving a greater per cent. of the essentials for sustaining life from this source, rather than eating so much meat, starches and various other things, which only serve to keep the alimentary tract in a sluggish condition, bringing on diseases of various kinds.

Why are unfermented wines, which are nothing more than the sweetened juices of fruits, recommended for convalescing people? Because they are beneficial. This alone should convince you that your every-day diet should consist of more fruit.

In conclusion, if fruit was used only for the cellulose which one obtained, it would be a paying investment without mentioning the nutrient value and pleasure derived from eating a large, fine, well-flavored fruit as, for example, a juicy red apple.

THE DIETETIC VALUE OF FRUIT.

C. De Pue.

Who among us cannot from experience sympathize with Mark Twain when he says he always has a "kind of hankering after the kitchen when the baking is going on." A whiff of some delicious dish, whether cooked or not, creates an instant desire and longing which only gratification can appease, and it is this very effect of creating an appetite where none existed before which gives to fruit one of its main dietetic values.

Just looking at a basket of fine, richly colored fruit gives one a longing and "watering of the mouth" which only possession can stop, while biting into a large, mellow, juicy fruit and feeling the tender pulp crushed between the teeth and the cool juices on the parched mouth, gives a longing for more that can be equaled by no other stimulant, and this very whetting of the appetite is of infinite benefit even to the most healthy and robust.

This fact is taken cognizance of by doctors who always prescribe fruit, either as a whole or for its juices, for the convalescing, not so much for the real nutriments contained therein as for the bracing, stimulating effect of these juices. Medical authorities now agree that the fresh acids contained in all fruits are absolutely necessary to the best workings of the human body and that the pulpy parts make a fine medium through which the smaller wastes of intestines are carried along, thus aiding digestion by keeping the tract clean

"Yes," says the economist, "that is all very well, but fruit is too expensive for the benefits so received."

But this is not so, for fruits contain the same real nutritive ingredients as do meats, breadstuffs, etc., although in less, but still sufficient quantities to supply needs of the human body, at least for limited periods of time, as has been proved by government tests along these lines.

These tests also show that the price paid for the energy derived is not any higher than that derived from our more common sources and that altogether fruits make a cheap and, from an aesthetic point, pleasing way of getting the malic, citric and other acids so necessary to a well-balanced ration.

A PROPHECY.

MISS ALICE STREEPER.

When man becomes sovereign where now he is slave—
He is slaved to tradition, false reason and fear—
He will rate at true value the fruits Nature gave,
And know that her blessings are his to revere.

Tradition has told him, and he has believed
That fruit's greatest virtues comes not till it's turned
Into red wine and brandy, which he, sore deceived,
Let enter his temple, where they rankied and burned.

He was taught by his father; he hears it today,
His strength will desert him and wasted he'll be
If he oft at the shrine of Romona doth stay;
No goddess of muscle and vigor is she.

Ah, the sun of tomorrow is shedding his rays
Down the long slopes of orchards that whiten our hills
With their billows of blossoms. In Autumn's ripe days
Their owner beholding, with thankfulness thrills.

For there's food for the people of daintiest mold.
It falleth in plenty—to each one his due;
The elixir of health's 'neath that Pippin's bright gold—
Yon Baldwin is nectar, sunripened all through.

Their juices are vital, from Life's very veins.
Death ne'er yet has touched them with dark, murderous hand,
And the brain fruits have nourished ne'er loses, but gains
In the conflict with error, the heights of command.

This man of morrow, a giant is he,
With his unclouded brain he has conquered the world;
He has bidden that host of disease to flee,
And their banners of madness no more are unfurled.

For he's garnered his vintage and used it aright;
He has sown his broad acres with nut tree and plum,
The herds that once pastured have faded from sight,
And he feedeth now ten, when his father fed one.

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*From December 1 to April 1, address at Columbus, Agricultural Department

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Prof. H. A. Gossard showing results at field meeting at North Amherst.

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